

The NEBB Professional

2020 – Quarter 1

Cover Story:

Whole Building Technical Commissioning: The NEBB way *right*

- NEBB Seeks Subject Matter Experts (SMEs)
- Escape to The Greenbrier, Crown Jewel of West Virginia
- 2020 NEBB Pre-Conference Program Guide
- NEBB Turns 50!
- NEBB Enters Memorandum of Understanding with ASHRAE

The official magazine of



2020 NEBB Annual Conference

The Greenbrier Resort ■ April 2-4, 2020



Sign up for the
Conference!



2020 NEBB Annual Conference

A Clear Vision to the Forefront of a Changing Environment



NEBB President's Message

2020 is here and I would like to wish everybody a healthy and happy new year!

In order to continue to be the premier international certification association for firms that deliver high performance building systems, NEBB in 2020, has a clear vision to the forefront of a changing environment.

Our staff, Board of Directors, committees, and many volunteers continue to work hard on the array of projects that help keep us in the forefront.

Now that the classroom is complete at NEBB-TEC, Don Hill has been working diligently on the drawings and equipment schedule for the Training Lab. This, along with the many technical seminars that we hold in Gaithersburg and across the country, make NEBB the leader of the pack in training and education programs. For a list of upcoming seminars, dates and times can be found on the NEBB website.

The TAB committee is finalizing two projects that will soon be available, too. The TAB Manual for Technicians update and a NEBB app that will be available for iOS and Android.

NEBB is also currently seeking Subject Matter Experts. If you are interested in becoming an SME, please email NEBB's exam development coordinator, Cristi Arbuckle, at cristi@nebb.org for an application.

The 2020 NEBB Annual Conference, being held at The Greenbrier—America's Resort, in White Sulphur Springs, WV from April 2-4 is beginning to come together beautifully as this issue goes to press. As you can imagine, picking a location to hold the annual conference is a huge undertaking. You have to come up with a list of possible locations and whittle it down to a final three. Of my final list, The Greenbrier was the first location that I visited—and also the last that I needed to. I knew within the first few hours of touring this resort that it was the location I wanted to hold our annual conference. I knew it would work great for NEBB.

A big reason I thought that The Greenbrier worked is the fact that it is drivable for many of our chapters. I live 15 miles west of Philadelphia, PA and I have made the trek twice. I made it in less than 6 hours and the scenery through the mountains is beautiful.

The Greenbrier is a National Historic Landmark and world-class resort that has been welcoming guests from around the world since 1778. The Greenbrier offers exclusive services and amenities such as championship golf, fine dining, more than 55 activities, designer boutiques, a world-renowned mineral spa and a 103,000 square foot gaming and entertainment venue.

For the conference, we will be keeping with the popular three-track session format with educational topics that span all disciplines along with informative business presentations. We are also working with staff to bring in the many vendors that supply our industry with the products that we use in our daily business endeavors.

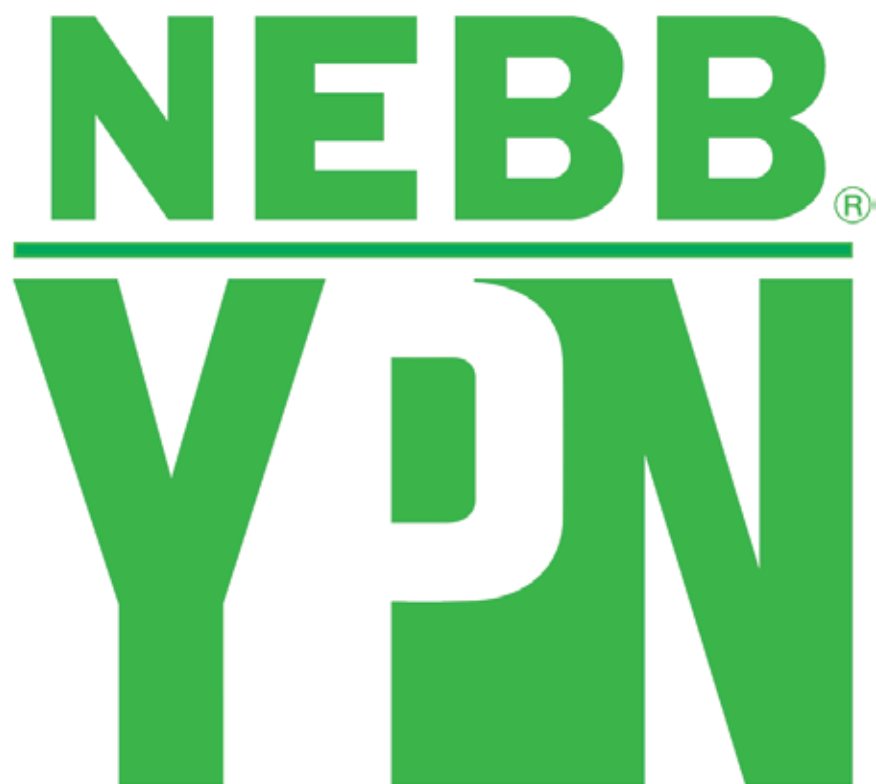
We have a full agenda planned, so please take the time to read through the Conference Program Guide. Also make sure to visit The Greenbrier web site to explore the many activities that they offer and register for them ahead of time to assure availability.

See you at The Greenbrier!

Jeff Schools

Jeff Schools

President



Young Professionals Network

TIPS & TRICKS VIDEO CONTEST

Be a Part of Something BIG!

NEBB's YPN Committee is launching its FIRST 2-Minute Tips & Tricks Video Contest! Open to any YPNer (up to age 39), tap your professional and creative abilities to submit a winning video on any subject of your choice! One entry per person or team. Two winners per quarter. For a list of possible topics, contest information and application form, go to www.nebb.org!



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announced!**

**Let Your Imagination
Soar!**

NEBB YPN
YPN@nebb.org

Contest: Quarterly Winners

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WHOLE BUILDING TECHNICAL COMMISSIONING

By James Bochat

Most Building Commissioning projects are based upon ASHRAE Standard 202 or Guideline 0, which describes the general commissioning process as management of a contractor's quality process that is intended to help the contractor self-police his own work for the delivery of installed quality. This process also requires the commissioner to keep an issue log of found issues. USGBC has described the required commissioning process for LEED projects to follow the ASHRAE process and include the following minimum scope of commissioning services:

Minimum LEED Commissioning Scope

1. HVAC Systems
2. HVAC Control Systems
3. Refrigeration Systems
4. Electrical Lighting Controls
5. Electrical Distribution
6. Plumbing Hot Water Systems
7. Renewable Energy (if applicable)
8. Building Enclosure (Only if EA Credit 3 Option 2 is selected)

Many building owners have found that most commissioning efforts do not actually deliver building performance, but do provide a large pile of paper check sheets from the contractors which say everything is "OK", when it is not. So, what is the problem? We have known how to effectively commission systems for a very long time in

commissioning industrial facilities. It is unfortunate that ASHRAE did not review the industrial commissioning process when creating their commissioning guidelines. If they had, we would have a more technical process that would have delivered building performance. The ASHRAE process of contractor quality check sheets are a masterful interconnecting process, unfortunately it just doesn't work in actually delivering performance. The reason is most contractors either use people who do not know what a quality installation is to fill out the check sheets or they just fill them out to meet the work requirement without paying attention to the actual installation.

In industrial commissioning, all systems are reviewed and fully tested up to three times before being put into operation. No sampling is ever used and the people doing the commissioning are held accountable for results. The reason for this robust process is if something goes wrong, someone could die. In a commercial project the risks are not the same, but we should be using some of the attributes of industrial commissioning for commercial systems if we truly want our systems to function correctly and to deliver true performance. To help clarify the differences between the ASHRAE process and an effective process we have titled the ASHRE process as *Paper Based Commissioning* and our process as *Technical Based Commissioning*.



The main differences between *Paper Based Commissioning* and *Technical Commissioning* is that the Technical Commissioner uses only third-party inspections and tests whereas paper-based commissioning uses mostly first party inspections and tests. Technical commissioning does not use sampling strategies but tests all systems and components. Technical commissioning also is required to follow all issue log items to their resolution, no issue may be left unresolved. These few differences make a huge difference in the actual performance of the buildings systems.

The following detailed list indicates the differences between the two processes:

Differences Between Paper Based and Technical Commissioning Processes		
Activity	Paper Based Cx	Technical Cx
OPR & BOD review	Perform review & comment	Assist owner in creating the OPR, review final OPR and BOD & Comment
Cx Plan	Provide Cx Plan	Provide Cx Plan
Design Review	Perform design review	Perform a Cx focused design review including control sequences
Design Issue Log	Maintain a design issue log	Maintain a design issue log and verify final CD's incorporate issue resolutions
Kickoff Meeting	Hold Kickoff Meeting	Hold Kickoff Meeting
Submittal Cx Review	Review contractor submittals for check sheet data	Review contractor submittals for capability of delivering design performance including operations
Pre-Startup Check Sheets	Create pre-startup check sheets for contractors	Review contractor's QC program documents. If they don't have any, we will supply them to meet LEED requirements
Check Sheet completion	Check sheets completed by contractors and turned into the GC and eventually sent to the commissioner	Check sheets completed by contractors and turned into the GC, used mainly as contractor certification of completion
Sequence of Control Review	None	Hold a sequence of control workshop where each sequence is vetted for correct control and that will deliver building performance.
Startup	Cx observes some contractor performed startup activities	Contractor performs startup activities

Differences Between Paper Based and Technical Commissioning Processes		
Activity	Paper Based Cx	Technical Cx
Startup Check Sheets	Create startup check sheets for contractors	Review contractor's QC program startup documents. If they don't have any, we will supply them to meet LEED requirements
Check Sheet completion	Check sheets completed by contractors and turned into the GC and eventually sent to the commissioner	Check sheets completed by contractors and turned into the GC, used mainly as contractor certification of completion
Cx Installation inspections	Inspects systems installation for general compliance to design documents	Inspects systems for technical compliance to standard practice for final system performance
Control System Point Testing	Done by contractor	Cx Performs 100% Cx point-to-point control system tests with the contractor
Control System Failure mode testing	Done by contractor and witnessed by commissioner	Performed by Cx and contractor and witnessed by owners, operators
Control System Functional testing	Done by contractor on a sampling basis, normally under 25% sample rate, approved or witnessed by Cx	Cx performs 100% Cx functional testing with the control contractor
TAB Verification	Backcheck 10% of TAB readings	Review preliminary report and balance plan. Verify key balance areas such as box & flow meter calibration, building pressure control and OSA control.
Issue log management	Maintain a construction issue log	Maintain a construction issue log and verify final resolution of all issues. No unresolved issues allowed
O&M Cx Review	Review contractor O&M manuals for compliance to specifications	Review contractor O&M manuals for compliance to specifications
Operator Training	Verify operator training was held	Verify quality of operator training
Performance Tracking System	None	Assists the owner in creating or setting up a performance tracking system to verify future performance
Systems Manual	Provide a system manual with all O&M manuals and FPT designs	Provide a system manual with a facility operations guide, final as built submittals for all control systems and O&M manuals and FPT designs
Cx Report	Provide a Cx report with copies of all Cx documents	Provide a Cx report with copies of all Cx documents
Warranty review	Perform a 10-month warranty review	Perform a 10-month warranty review

So, now that we are done with the process comparison, let's talk about what the scope of commissioning should be for a project that should have systems work without a lot of work by the operations staff after occupancy. At the beginning of this document we described the minimum scope required by LEEDv4 which was limited to only

those systems that affect energy. The technical commissioning process is used for all kinds of systems to verify actual operation and performance, not just energy usage. Some systems are much more important to total performance than others, so the owner may want to select only those systems they think are important enough to spend



the funds to commission or they can select all systems to be commissioned so the operations staff does not have to worry about them after occupancy.

The following list gives the systems in order of importance to the total building performance:

1. HVAC Control Systems
2. HVAC Mechanical Systems
3. Lighting Controls
4. Building Enclosure
5. Plumbing Hot Water & Pressure Systems
6. Emergency Power Systems
7. Electrical Distribution Systems
8. Fire Alarm Systems
9. Plumbing Fixtures & Piping Systems
10. Fire Protection Systems and Fire Pumps
11. Renewable Energy Production
12. Security Systems
13. Communication Systems
14. Vertical Transportation Systems

Commissioning Concepts is certified and experienced in each of these commissioning scope items and would always recommend including scope items 1 through 10 on all projects. In truth, scope items 1-7 are the expensive ones, whereas scope items 8-14 are very low cost so the payback on these additional disciplines is high.

I hope you will consider utilizing Technical Commissioning on your next project and will incorporate the full scope of commissioning activities to receive the maximum benefit from your commissioning services. ●

Thanks for reading!

About the Author



James Bochat is new to KFC Engineers, having merged his company, Commissioning Concepts, on January 1, 2020. He has been involved in the Arizona Engineering and Construction industry for over forty years. His experience includes Mechanical Design, Mechanical Construction, Controls, Test & Balance, Commissioning and Retro

Commissioning. He is a former President of NEBB and has been instrumental in developing and teaching commissioning standards for NEBB. He is a Life Member of ASHRAE and has served on several ASHRAE committees.

Jim is a native of Arizona and attended Arizona State University studying mechanical engineering. He has worked for an Arizona utility, mechanical engineers and architects prior to entering into the mechanical construction industry. Professional societies that Jim belongs to include: NEBB, ASHRAE and USGBC.



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21 lbs

magnetically
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sturdier foot
design



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**I AM AN
EXPERT**

NEBB Seeks Subject Matter Experts (SMEs)

By Cristi Arbuckle, NEBB's exam development coordinator

NEBB, the premier international certification association for firms that deliver high-performance building systems, is seeking volunteer subject matter experts (SMEs) to help develop exams in the following disciplines:

- Building Enclosure Testing (BET)
- Building Systems Commissioning (BSC)
- Cleanroom Performance Testing (CPT)
- Fume Hood Testing (FHT)
- Sound Measurement and Vibration Measurement (S&V)
- Technical Retro-Commissioning for Existing Buildings (RCx)
- Testing, Adjusting and Balancing of Environmental Systems (TAB)

What does a subject matter expert do?

SMEs are vitally important to creating valid, legally defensible exams that prove competence in the field.

The foundation of all exams is the creation of a job analysis, which identifies the essential job duties needed to demonstrate competence. The job analysis becomes the blueprint for the exam.

Once the job analysis is complete, SMEs get to work on writing questions for the exam. A rigorous activity, item writing is mostly done on their own after initial training. Creativity, critical thinking, and adherence to deadlines is essential to completing this task successfully.

As we build a bank of questions, SMEs review each other's submissions to make sure they make sense, aren't misleading, and that the answer is correct.

The final piece in the exam development puzzle is called a cut score study, which is the scientific process of determining the passing point of the exam. SMEs are asked to review a final draft of an exam and rate the difficulty of each question.

What is the time commitment?

Nearly all exam development activities are conducted by a series of webinars lasting one to two hours each. However, writing questions for an exam is an individual activity done at the SME's convenience; generous writing deadlines are established to keep SMEs motivated and moving forward. Prior to beginning any activity, SMEs will be given an estimate of the time involved to complete it.

What are the benefits of becoming an SME?

SMEs have a golden opportunity to define and validate their profession, while networking with other SMEs and NEBB leadership. In addition, SMEs gain recognition by sharing their expertise and taking their place among the experts of their professions. Finally, SMEs earn continuing education units based on the hours spent on each activity.

What are the qualifications of becoming an SME?

Successful SME applicants should hold a current NEBB credential in good standing, although some industry ex-

perts may be qualified without holding a NEBB certificate. SMEs should have extensive knowledge of the field and an interest in bringing their daily professional experience to each exam development activity. It is helpful to be detail oriented, and able to work individually, as well as part of a group, while sticking to deadlines. Finally, since most webinars are conducted during business hours (weekdays between 9:00 a.m. and 5:00 p.m. Eastern time), SMEs would need to be available during those times.

How do I apply to become an SME?

SME applicants will be asked to complete an application, resume, and brief statement of interest. Successful applicants will be asked to sign a non-disclosure/confidentiality agreement, NEBB volunteer agreement, and provide an optional photograph for our files. Questions and requests for applications can be emailed to NEBB's exam development coordinator, Cristi Arbuckle at cristi@nebb.org. ●

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Escape to The Greenbrier, Crown Jewel of West Virginia

By Kerri Souilliard

For those fortunate enough to follow NEBB to The Greenbrier in West Virginia for the 2020 NEBB Annual Conference April 2-4, a world of wonder awaits. Between the jaw-dropping landscaped premises and punchy interiors, exciting activities to entertain any interest, and the fun, informative technical sessions of the conference itself, there's no better time to venture there than now. If there's only one place you ever make it to in West Virginia, The Greenbrier—a place where, according to the staff, “anything is possible”—should be it.

Travel Choices for Getting There

In the early 1830s, Chesapeake and Ohio (C&O) Railway built a train station to serve passengers of the Pullman rail coaches en route to popular resort cottages in White Sulphur Springs, WV. After purchase by C&O and an expansion to become the Old White Hotel, the property was then closed for renovations and reopened as The Greenbrier.

Today, the original station, which was replaced in the 1900s, is The Greenbrier's Christmas shop. The current

White Sulphur Springs station is now located directly across the street from the front gate of The Greenbrier and is served by Amtrak's Cardinal route, offering business class service from Union Station in Washington, DC, Penn Station in New York, or Union Station in Chicago. Whisking passengers from busy cityscapes to a hidden gem in the mountains, the Cardinal also offers roomettes, bedrooms, and coach seating. The Greenbrier offers complimentary transportation from the station.

However, if you prefer to exercise more control over your travels or require more flexibility for stopping and creating your own timeline, driving is another option. Certain to deliver a scenic excursion no matter which direction you begin, a peaceful drive to the resort concludes conveniently off Interstate 64 at 101 Main Street, White Sulphur Springs, WV 24986. Valet parking is available at the hotel.

NEBB conference goers hailing from farther distances may choose to arrive through a handful of different airports. Travelers that fly into the Greenbrier Valley Airport

(LWB), which is located a mere 15 minutes from The Greenbrier, can then reserve a transfer via The Greenbrier Hotel Shuttle service. Other airports in the vicinity include Raleigh County Memorial Airport (BKW) in Beckley, WV which is about an hour away; the Roanoke-Blacksburg Regional Airport (ROA) in VA which is about one and a half hours from the resort; and Yeager Airport (CWA) in Charleston, WV which is two hours from The Greenbrier.

Luxe at First Sight

Emerging from a picturesque, green backdrop in the Allegheny Mountains, the stately architecture of The Greenbrier stands proudly, ready to welcome guests to “America’s Resort.” Its lavish beauty continues to unfold



as you advance onto its impeccably manicured grounds and into its extravagant, vibrant interiors designed by famed decorator and socialite Dorothy Draper. Suffice it to say, 2020 NEBB Annual Conference attendees and guests are in for a treat—a literal one, in fact, as the scent of Owner Jim Justice’s favorite chocolate chip cookies baking wafts through the air of The Greenbrier’s lobby.

Hired to transform the hotel after it was used as a hospital during World War II, Draper took the project on during the height of her career and, upon completion, is said to have called it the jewel in her crown. Her use of bold patterns, lively hues, and opulent accessories saturated The Greenbrier in the glamour and charm it is now synonymous with, while proving she was the most influential tastemaker in America at the time. Using her theme of “Romance and Rhododendrons” to guide the renovation, she pushed the edge of Hollywood Regency style just the right amount. From richly textured velvets encasing sumptuous chaises below monumental crystal chandeliers, to ruby red carpeting featuring dramatic floral and boldly striped turquoise and white walls near a stairway wallpapered in her Brazilliance print of emerald green banana leaves, the décor’s perfect pairings deal elements of surprise that invoke enchantment, while entertaining the eye.

She once proclaimed, “There seems to be within all of us an innate yearning to be lifted momentarily out of our own lives into the realm of charm and make believe,” and her artful interiors of The Greenbrier seem to offer exactly that.

As Equally Haute as Historic

Though the luxury hotel industry offers an array of options these days, The Greenbrier allows guests to indulge in something more: the ability to step back in time and share part of America’s history. Simply upon entering through the grand doors and stepping foot onto the black and white patterned marble floors of the main lobby, it feels like another era—an era full of grandiose accoutrements, high society socials, and maximalist decadence that cannot be copied by modern day minimalist-chic luxe hospitality.

The Greenbrier’s staff historian, Dr. Robert Conte, would be happy to walk you through the resort’s storied past during one of his daily tours of the property offered gratis to all guests. Unlike some yawn-worthy grounds tours, tidbits like General Eisenhower turning the hotel into an army hospital during World War II or the fact that the





featured chandeliers are the same as those used on the set of “Gone with the Wind” are bound to keep guests engaged.

Having served as a popular getaway for the Southern elite to escape the summer heat since its inception, The Greenbrier has hosted its fair share of royalty, celebrities, athletes, and top tier business leaders over the years. The Greenbrier’s guest list of rich and famous visitors totals well into the thousands and spans all across the country, and many times, the world. In one such case, the impromptu visit of Princess Grace (Kelly) and Prince Rainier of Monaco led to a room being dedicated in their honor. More recently, Jennifer Garner, Charles Barkley, Brooke Shields, Lionel Ritchie, Jessica Simpson, and Shaquille O’Neal all stayed at The Greenbrier at the same time in 2010 for the opening of its 100,000 square foot Casino Club.

With unrivaled national distinction, this elegant vacation destination has also hosted many prominent politicians, including 27 American presidents, as well as served as a secret relocation facility for the US government during the Cold War. At first glance, the Georgian white columned six-story main building of The Greenbrier can even resemble the south-facing neo-classical Federal façade of the White House in Washington, DC.

The Presidential Preference of Meeting Grounds

The allure of The Greenbrier seems to speak specifically to presidents. Eisenhower, Kennedy, Nixon, Johnson, Bush, Clinton...and now NEBB’s own 2019-2020 President Jeffrey Schools. Though he currently leads an international certifying association rather than an entire nation, he too followed the paths of past presidents by realizing there was something special about the resort as soon as he first stepped foot on premises. This year, everyone attending the 2020 NEBB Annual Conference will have the chance to stay at what Schools instantly recognized as, “one of the finest luxury resorts around the world.”

If by some odd chance learning within such a lushly encompassed technicolor dream isn’t grand enough, the focus and format of the 2020 NEBB Annual Conference’s technical sessions, wide array of vendors, and networking opportunities will certainly offer something to write home about.

Schools affirms, “We will be keeping with the popular three-track session format, with educational topics that span all disciplines along with informative business presentations. We are also working with staff to bring in the

many vendors that supply our industry with the products that we use in our daily business endeavors.”

With a robust conference agenda, the 2020 NEBB Annual Conference will open with a welcome session and keynote presentation by veteran comedian and television personality Scott Bloom.

The three tracks are as follows:

- **Track 1: BSC and TAB**
Featured sessions will include: Instant Experience: Lessons Learned Commissioning in the Field; #1 TAB Procedural Standard Updated and Changes; #2 TAB Session - Report Forms; HVAC Air Leakage Testing; Understanding Variable Frequency Drive Applications; TAB Specifications; Thermal Imaging and Selecting the Right Camera
- **Track 2: CPT and IAQ**
Featured sessions will include: Making Healthcare Construction Activities Safer: An Overview; Exploring the Practical Side of a Cleanroom Dilution Model; Phoenix Controls Air Valves as Used in Critical Environments; Efficiently Conditioning High Quantities of Outdoor Air; Cannabis and Clean Rooms; Cleanroom Recovery Testing and Discoveries; Lab Controls System Retrofit
- **Track 3: Business and Leadership Practices**
Featured sessions will include: Always Staying Ahead in a Changing Environment - Microsoft Teams; #1 Cyber Crime and Security - The Impact that Cyber Intrusion Can Have on Your Business; #2 Cyber Crime and Security - The Impact that Cyber Intrusion Can Have on Your Business; NEBB Firm and Individual Compliance Panel; Chart Your Course to Effective Leadership; A Clear Vision: What to Look Out for on Projects

At the end of three days immersed in interesting material presented by subject matter experts, conference attendees will bid farewell after a closing session by keynote speaker Charles Marshall.

Activities Aplenty: Dare to Experience Something New

With a property made up of epic proportions (11,000 acres), The Greenbrier entices guests with an unmatched array of activities and events. Catering to just about every pastime and interest, exclusive services and amenities such as fine dining, more than 55 sports and activities, designer shopping boutiques, a world-famous mineral spa, a chapel, and the only private casino in the US are just a reservation away.

The fine dining includes 20 restaurants, lounges, and bars. The varied cuisine types, from Chinese, Japanese, Korean and Thai to prime cut steaks and Southern comfort food include farm-to-table fare produced by The Greenbrier Farm.

The restorative, mineral-based foundation of the award-winning spa has been a cornerstone of retreats to White Sulphur Springs since the late 1770s when vacationers came seeking the curative powers of the springs. Initially discovered by the Shawnee, doctors began suggesting the minerals and Sulphur of the spring water may cure chronic illnesses.

With sunlight filtering through billowing white canopies, the 30-meter indoor swimming pool offers refreshing relaxation in any season. Outdoors, the breathtaking infinity pool blends seamlessly into the mountainside.

Downstairs, the shopping area presents a wealth of exclusive items for purchase. For world-class gaming and entertainment, the 100,000 square foot casino area (which is open only to registered guests) features tables, as well as live performances.



The amenities are seemingly endless. An aerial adventure course, falconry lesson, paintball challenge and Polaris driving adventures are just a few that stand out. From fishing and shooting clay to tennis and croquet, the full list of activities available at The Greenbrier can be found at: www.greenbrier.com/activities

Famous Fairway

Although there are many exciting activities and events at The Greenbrier to occupy guests on any given day, Golf, in particular, stands out for its ability to draw well-known names from all over the world. Legends like Sam Snead, Ben Hogan, Gary Player, Arnold Palmer, Jack Nicklaus, Lee Trevino, Tom Watson, Seve Ballesteros, Stuart Appleby, Tiger Woods, and Phil Mickelson have all played at The Greenbrier. Beyond golf professionals, the courses have also attracted prominent personalities throughout the years such as Bob Hope, Lou Gehrig, Billy Graham, Jerry West, Bing Crosby, Larry Fitzgerald, Denny Hamlin and Drew Brees.

With three resort courses and a walking course, you can opt to play on a variety of lush greens. The resort courses include Old White TPC where the PGA Tour holds *A Military Tribute* each year; The Greenbrier, the only course across the globe to have hosted both The Ryder Cup and The Solheim Cup; and The Meadows, which was formerly known as a 9-hole course called Lakeside.

Starting with an 8:30 am modified shotgun on Thursday, April 2, NEBB will hold its 23rd Annual Golf Tournament—open to conference attendees and guests—on the Meadows Course. Opened in 1911, the course has since been redesigned twice and was even expanded using dirt that was excavated in order to construct the Bunker under the hotel.

Hidden in Plain Sight: The Bunker

The Bunker at The Greenbrier showcases a captivating period in the hotel's—and America's—history. Carved deep into the Allegheny mountainside in the late 1950s as a relocation center for Congress in the event of a nuclear emergency, the bomb shelter was constructed at the same time as the West Virginia Wing of the hotel and completed in 1962 prior to the Cuban Missile Crisis. Although no evacuation ended up taking place, The Greenbrier was on high alert and ready to accommodate America's policymakers if needed.

Guests may now tour the underground fallout shelter, which was declassified in the 1990s. Providing an expe-



rience unparalleled by any other resort, the Greenbrier's 90-minute tour of the 112,000 square foot Bunker allows guests to take an in-depth look at a legendary facility that served as a safeguard for the US government for 30 years.

Guided tours of the Cold War Era Bunker have been scheduled specifically for 2020 NEBB Annual Conference attendees on Thursday, April 2. ●

About the Author



With over a decade of corporate marketing experience, Kerri Souillard has the unique ability to interpret and create brand stories for even the most complicated, technical organizations in words their target audiences readily understand. Her strong business acumen and deep understanding of many complex processes and technical disciplines blend seamlessly with her extensive background in digital strategy, copywriting, and content development to serve clients' overarching business goals—without the wasteful spending of traditional agencies. For more info, visit www.kreativstrategy.com

NEBB TURNS 50!

Did you know that NEBB will celebrate its golden anniversary next year? That's right—NEBB turns 50.

NEBB's long and interesting history since it was formed stems from years of hard work by volunteers and staff to make it what it is today. We want to share its history with you in a special edition 2021 NEBB Yearbook.

Help us make this a truly spectacular chronicle of NEBB's history by submitting pictures and stories about NEBB over the past 50 years.

Please send your submissions to Tiffany Suite, EVP at tiffany@nebb.org. Thank you.



NEBB and ASHRAE Formalize Collaborative Effort to Improve Building Design, Construction, Performance Verification, and Operation

Gaithersburg, MD (November 8, 2019) NEBB, the premier international association of certified firms and certified individuals working to verify environmental and system performance in buildings, recently entered a Memorandum of Understanding (MoU) with ASHRAE. Intended to advance and promote the mutual interests of professionals engaged in the design, construction, performance verification, and operation of buildings, the MoU was signed by 2019-2020 ASHRAE President Darryl K. Boyce and 2018-2019 NEBB President Jim Whorton on October 19, 2019.

Through the MoU and the joint MoU committee selected to uphold the agreement, NEBB and ASHRAE will continue to enhance their working relationship and individual efforts toward achieving mutual objectives. By committing to the ongoing advancement of collaborative projects, keeping one another informed of major initiatives, and discussing new opportunities for collaboration, both organizations will be better suited to promote adoption and widespread use of codes and standards in order to serve engineers and facilities professionals. In addition, this MoU formalizes the commitment of ASHRAE and NEBB to work together to advance research into the sustainable design, construction, and operation of healthcare facilities.

"NEBB has a longstanding history of working with ASHRAE to better the building industry through the promotion of procedural standards, educational programs, and similar agreements designed around cooperative efforts. We look forward to continuing to strengthen our relationship through this strategic partnership, while working with many talented professionals to build the future of our industry together," stated NEBB Executive Vice President Tiffany Suite.

"The MoU between NEBB and ASHRAE reinforces the power of collaboration and provides both organizations a greater opportunity to leverage our resources as we offer innovation and emerging technologies to the building services industry," said 2019-20 ASHRAE President Darryl K. Boyce, P.E. "I look forward to continuing our partnership

as we bring our unique strengths together to advance the built environment through sustainable practices."

ABOUT NEBB:

NEBB is the premier international association of certified firms and certified individuals that perform building enclosure testing, building systems commissioning, building systems retro-commissioning, fume hood testing, sound and vibration measurement, cleanroom certification, and testing, adjusting and balancing of environmental systems. NEBB is the leading source of industry information through its educational and training seminars, standards and procedures, personnel certifications, publications, specifications, textbooks, study courses and *The NEBB Professional* magazine. More information on NEBB is available at www.nebb.org

ABOUT ASHRAE:

Founded in 1894, ASHRAE is a global leader in the advancement of human well-being through sustainable technology for the built environment. As an industry leader in research, standards writing, publishing, certification and continuing education, ASHRAE and its members are committed to shaping tomorrow's built environment today through strategic partnerships with organizations in the HVAC&R community and across related industries. For more information, visit ashrae.org. ●



Pictured above is the 2019 NEBB Board of Directors, along with Tiffany Suite, NEBB Executive Vice President and Darryl Boyce, ASHRAE President.

NEBB Attends IHACI Tradeshow

The NEBB Title 24 Committee attended the IHACI Trade Show on November 20, 2019 to promote NEBB's Title 24 Mechanical Acceptance Testing. NEBB is one of the State of California Energy Commission's approved Mechanical Acceptance Test Technician Certification Provider. Any firm or Technician pursuing Title 24 certification must use one of the State's approved providers to receive this. Attendance at this tradeshow helps to promote NEBB and our certification program for Title 24.

The trade show was attended by a wide range of contractors and technicians wanting more information about our training and certification program. Title 24 Committee Members in attendance included Southern California EBB Chapter Coordinator Jim Rosier, Northern California/Hawaii NEBB Chapter Coordinator Audrey Kearns, Roman Zaretsky, and Dawayne Trobaugh. ●





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2020 NEBB Annual Conference

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Pre-Conference Program Guide

The Greenbrier Resort ■ April 2-4, 2020

Message from the President



Welcome to the 2020 NEBB Annual Conference.

It is my pleasure and honor to extend an invitation to you to attend the NEBB 2020 Annual Conference. I hope that you are able to attend and look forward to a conference that is educational, informative and entertaining.

The Greenbrier, America's Resort, has been selected as this year's conference venue. The Greenbrier is widely regarded as one of the finest luxury resorts around the world. Surrounded by the wondrous Allegheny Mountains, The Greenbrier offers exclusive services and amenities such as championship golf for our NEBB outing on the Meadows Course, fine dining, more than 55 activities, designer boutiques, a world-renowned mineral spa and an over 100,000 square foot gaming and entertainment venue.

We will be keeping with the popular three-track session format with educational topics that span all disciplines along with informative business presentations. We are also working with staff to bring in the many vendors that supply our industry with the products that we use in our daily business endeavors.

We have a full agenda planned so please take the time to read through all of the information provided. Also make sure to visit The Greenbrier web site to explore the many activities that they offer and register for them ahead of time to assure availability. I look forward to seeing you at America's Resort!

Thanks,

Jeff Schools
NEBB President

2020 NEBB Conference Schedule at a Glance

TIME	MONDAY - MARCH 30
8:00 am – 5:00 pm	NEBB Building Enclosure Testing Seminar (BET) for Certified Professionals
	TUESDAY - MARCH 31
8:00 am – 5:00 pm 12:00 pm – 5:00 pm	NEBB Building Enclosure Testing (BET) Seminar for Certified Professionals Annual Conference Pre-Registration Open
	WEDNESDAY - APRIL 1
7:00 am – 5:00 pm 8:00 am – 5:00 pm 8:00 am – 5:00 pm 6:00 pm – 10:00 pm	Annual Conference Registration Open NEBB Exam Day Closed Committee Meetings NEBB Volunteer Appreciation Dinner
	THURSDAY - APRIL 2
7:00 am – 5:00 pm 8:30 am – 3:00 pm 10:00 am – 1:00 pm 1:00 pm – 5:00 pm 4:00 pm – 5:00 pm 5:30 pm – 6:45 pm 7:00 pm – 10:00 pm	Annual Conference Registration Open NEBB 23rd Annual Golf Tournament Guest Event (Greenbrier Bunker Tour and Lunch) Exhibit Hall Open NEBB Past Presidents' Meeting Opening Session: Welcome and Keynote Presentation Keynote Speaker: Scott Bloom Get Acquainted Reception
	FRIDAY - APRIL 3
7:00 am – 8:00 am 7:00 am – 5:00 pm 7:00 am – 5:30 pm 8:00 am – 9:00 am 8:00 am – 3:45 pm 8:00 am – 9:30 am 9:45 am – 11:15 am	Breakfast Annual Conference Registration Open Exhibit Hall Open TAB Teach the Examiner Session Technical Track Sessions TECHNICAL TRACK SESSIONS Track 1: BSC and TAB – Matt Nelson Track 2: CPT and IAQ – Ghassan Elkhatab Track 3: Business and Leadership Practices – Young Professionals Network Track 1: BSC and TAB – #1 TAB Committee Track 2: CPT and IAQ – Luis Chinchilla Track 3: Business and Leadership Practices – Jonathan Strausbaugh

2020 NEBB Conference Schedule at a Glance (con't)

TIME	FRIDAY - APRIL 3 (continued)
11:15 am – 12:30 pm	NETWORKING LUNCHEON
12:30 pm – 2:00 pm	TECHNICAL TRACK SESSIONS Track 1: BSC and TAB – #2 TAB Committee Track 2: CPT and IAQ – James Barrette and Chris Miller Track 3: Business and Leadership Practices – Derek Hedrick
2:15 pm – 3:45 pm	Track 1: BSC and TAB – Mark Terzigni Track 2: CPT and IAQ – Nicholas Pearce Track 3: Business and Leadership Practices – Derek Hedrick
	SATURDAY - APRIL 4
7:00 am – 8:00 am	Breakfast
7:00 am – 2:00 pm	Annual Conference Registration Open
7:00 am – 5:30 pm	Exhibit Hall Open
8:00 am – 9:30 am	NEBB Town Hall and Business Meeting
8:00 am – 4:00 pm	Chapter Coordinators Meeting
9:45 am – 3:30 pm	Technical Track Sessions
9:45 am – 11:15 am	TECHNICAL TRACK SESSIONS Track 1: BSC and TAB – Jeff Smith Track 2: CPT and IAQ – Peter Maguire Track 3: Business and Leadership Practices – Chapter Affairs Committee
11:15 am – 12:15 pm	NETWORKING LUNCHEON
12:15 pm – 1:45 pm	TECHNICAL TRACK SESSIONS Track 1: BSC and TAB – Panel Discussion – Various CPs Track 2: CPT and IAQ – Matt Lemieux Track 3: Business and Leadership Practices – Jennifer Donahue
2:00 pm – 3:30 pm	Track 1: BSC and TAB – Phil Emory Track 2: CPT and IAQ – Don Hill Track 3: Business and Leadership Practices – Young Professional Network
3:30 pm – 5:00 pm	Vendor Reception and Prize Giveaway
5:00 pm – 6:30 pm	Closing Session Keynote Speaker: Charles Marshall
	SUNDAY - APRIL 5
8:00 am – 12:00 pm	Board of Directors Meeting – OPEN
12:00 pm – 5:00 pm	Board of Directors Meeting – CLOSED

*Schedule subject to change



2020 NEBB Annual Conference

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Exhibits will be set up for learning opportunities between sessions.

The following Exhibitors have signed up with more to come!



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NEBB 23rd Annual Golf Tournament



**Join us for Golf at the
Greenbrier Meadow's Course!
Thursday – April 2, 2020**

SPONSORED BY



NEBB Annual Conference attendees and guests are invited to join their colleagues for the 23rd year of the Annual Golf Tournament.

The tournament is being held at the Greenbrier's famous Meadows Course starting with a 8:30 am modified shotgun.

The Meadows course began as a 9-hole course named Lakeside. Designed by Alexander H. Findlay, it opened for play in 1911. In 1923, Seth Raynor redesigned the course while he was on the property updating The Old White TPC and building the original Greenbrier Course. In 1962, Lakeside was expanded to an 18-hole routing by architect Dick Wilson, who used dirt excavated during the construction of The Bunker to expand the course. Years later, in 1999, Bob Cupp once again redesigned the golf course, at which point it officially became known as The Meadows.

Golf registration is \$195.00 per player to include greens fees and cart fees. Lunch, scoring and an awards presentation will be held following play in the Champions Room at the Golf Course. Golf club rentals are available for \$90.00 and shoes for \$15.00. Golf Club options include TaylorMade, Titleist, Callaway and Ping. Please note, rental arrangements must be made in advance due to limited supply. Please make sure to secure during registration.

Golf registration cancellations must be sent to and approved by the NEBB Main Office by March 20, 2020.

**No golf registration refunds will be issued after March 20, 2020.*

2020 NEBB Conference Advance Program

OPENING SESSION: THURSDAY, APRIL 2 ■ 5:30 PM - 6:45 PM



WELCOME AND KEYNOTE PRESENTATION

KEYNOTE SPEAKER: Scott Bloom

Scott is a veteran comedian and television personality who has built a reputation as the “go-to” choice for business humor, having hosted hundreds of events for companies such as FedEx, Ford, IBM, MetLife, PepsiCo, JPMorgan Chase and Verizon. In addition to his work as a highly respected emcee and comedic keynote speaker, he has had a successful career in television. Scott has been featured on Comedy Central numerous times, and was the host of his own weekly VH1 series. Scott recently co-hosted a national simulcast of the Grammy Awards from the Palace Theater. He currently lives in Los Angeles.

CLOSING SESSION: SATURDAY, APRIL 4 ■ 5:00 PM - 6:30 PM



CLOSING KEYNOTE PRESENTATION

KEYNOTE SPEAKER: Charles Marshall

Charles Marshall is one of the most popular humorous motivational speakers speaking today and has over 20 years experience speaking to audiences all over the United States. Each year, Charles travels 100,000 miles to perform in over 100 corporate and civic venues from New York to California. His animated delivery and original observations have captivated over 1,000 audiences over the past two decades, including many Fortune 500 companies. He is the author of several books including: *The Seven Powers of Success* and *I'm Not Crazy But I Might Be A Carrier*. He also has produced and performed two full-length comedy videos, *Fully Animated* and *I'm Just Sayin'!*

2020 NEBB Conference Advance Program

TECHNICAL TRACK SESSIONS: FRIDAY, APRIL 3 ■ 8:00 AM - 9:30 AM

TRACK 1: BSC AND TAB

8:00 am – 9:30 am **Instant Experience: Lessons Learned Commissioning in the Field**

SPEAKER: Matt Nelson – Host / Producer, The HVAC 360 Podcast



Instance experience is a perfect commissioning session for those of you who lack patients! Learn tips for starting from scratch, insights about being an engineer, best practices to take your services to the next level, and test yourself with a few photos from the field.

SPEAKER BIO: Matt Nelson is the host of the HVAC 360 podcast and is dedicated to improving HVAC education worldwide. He is a licensed mechanical engineer who works as a commissioning authority for his company, ECO Commissions. Also involved with ASHRAE's commissioning certification from the beginning, he is currently their exam committee chair.

TRACK 2: CPT AND IAQ

8:00 am – 9:30 am **Recommendations to Properly Commission and Maintain a Modern UFAD System**

SPEAKER: Ghassan Elkhatab – Business Development Manager, AirFixture



Session will describe what is Underfloor Air Distribution (UFAD) and how it is different from overhead systems. Session will also cover recommended methods to maintain supply plenum integrity, proposed procedures for testing, adjusting, and balancing a UFAD system, and recommended plenum leakage test and acceptance criteria. Session will also go over recommended UFAD sequences of operation.

SPEAKER BIO: Ghassan received a bachelor's degree in Architecture Engineering from the University of Kansas and has been a consulting Mechanical Engineer for over 14 years. Ghassan is currently a Sales Manager for AirFixture, a manufacturer of Under Floor Air Distribution (UFAD) products installed in over 140 million square feet worldwide.

TRACK 3: BUSINESS AND LEADERSHIP PRACTICES

8:00 am – 9:30 am **Always Staying Ahead in a Changing Environment – Microsoft Teams**

SPEAKERS: Young Professional Network

When you have a place to create and make decisions as a team, there's no limit to what you can achieve. Teams brings everything together in a shared workspace where you can chat, meet, share files, and work with business apps.

SPEAKERS BIO: The NEBB YPN are an articulated group of five guys spanning the globe. The desire for excellence and industry leading initiatives drives these guys to find, research and share the latest opportunities in their relative disciplines to keep NEBB way above the rest. With enthusiasm, passion and energy forming some of the key ingredients to this group. They are seeing amazing things unfold around them. The recognition of the vision from Jean-Paul Leblanc from the start of this group and with the incredible input from past presidents Jim Kelleher, Don Hill and Jim Whorton, this group continues to grow from strength to strength.



2020 NEBB Annual Conference

A Clear Vision to the Forefront of a Changing Environment

2020 NEBB Conference Advance Program

TECHNICAL TRACK SESSIONS: FRIDAY, APRIL 3 ■ 9:45 AM - 11:15 AM

TRACK 1: BSC AND TAB

9:45 am – 11:15 am #1 TAB Procedural Standard Updated and Changes

SPEAKERS: Donald Pittser – TAB Committee Chair and President, JEDI Balancing Middle East Qatar
Jonathen Lloyd – President, Lloyd's T.A.B Pty Ltd



The new PS9 is here! But how does it effect what you and your business does on a day to day basis. Join us in this unpacking panel discussion to learn what you are required to do to remain compliant.

SPEAKERS BIO: Donald Pittser is a TAB Committee Chair, NEBB National TAB Committee 2005-2009 and 2015-Current, former Rocky Mountain NEBB President and Board of Director. JEDI Balancing Middle East Qatar President.

Jonathen Lloyd is President of Lloyd's T.A.B Pty Ltd, from Queensland Australia, Lloyd, a TAB CP, is an active member of the TAB Committee, NEBB YPN and the NEBB Australia Board of Directors.

TRACK 2: CPT AND IAQ

9:45 am – 11:15 am Exploring the Practical Side of a Cleanroom Dilution Model

SPEAKER: Luis Chinchilla – Director, OPIA Operaciones e Ingeniería de Avanzada de Centroamérica S.A.



A testing model was developed and implemented in an attempt to provide an answer to the question: How many people and production lines can be fit inside Cleanroom? The testing model linked the Cleanroom Dilution Model with NEBB disciplines for testing procedure selection, resulting in a 4 tests model that was implemented in 2 different ISO-8 Class Cleanrooms, obtaining relevant conclusions about the practical side of the Cleanroom Dilution Model and its application on the field.

SPEAKER BIO: Luis is a licensed Chemical Engineer and possess a MBA with a major in Finance and a MBA with a major in General Management. At the NEBB level, is a NEBB CP for TAB, CPT and CxPP and a NEBB CT for CxA. He is a member of the BOD and Technical Committee for Capital-Mar Va International NEBB Chapter and a member of the NEBB BOD. He is also a member of CETA, IEST, ASHRAE and the Professional Association of Chemical Engineers in Costa Rica.

TRACK 3: BUSINESS AND LEADERSHIP PRACTICES

9:45 am – 11:15 am Performance Branding. Live Your Brand, Find Your Success!

SPEAKER: Jonathan Strausbaugh, Mechanical Engineering and Commissioning Manager, Parsons Corp.



Your company is something you have worked hard to build, but where you are building to? Identifying and deploying a Performance Branding strategy sets the fundamental basis for you to build your business personality around an ideal that allows you to provide a consistent experience for your clients.

SPEAKER BIO: Jonathan Strausbaugh served in the US Navy's EOD, worked as a Journeyman Pipefitter, Plumber, and Welder, and later obtained his degree in Mechanical Engineering. His commissioning work includes developing commissioning processes and programs for government and commercial ventures. Jonathan serves as Mechanical Engineering and Commissioning Manager for Parsons Federal Services.

2020 NEBB Conference Advance Program

TECHNICAL TRACK SESSIONS: FRIDAY, APRIL 3 ■ 12:30 PM - 2:00 PM

TRACK 1: BSC AND TAB

12:30 pm – 2:00 pm #2 TAB Session – Report Forms



SPEAKERS: Donald Pittser – TAB Committee Chair and President, JEDI Balancing Middle East Qatar
Jonathen Lloyd – President, Lloyd's T.A.B Pty Ltd

The new PS9 is here! But how does it effect what you and your business does on a day to day basis. Join us in this unpacking panel discussion to learn what you are required to do to remain compliant.

SPEAKERS BIO: Donald Pittser is a TAB Committee Chair, NEBB National TAB Committee 2005-2009 and 2015-Current, former Rocky Mountain NEBB President and Board of Director. JEDI Balancing Middle East Qatar President.

Jonathen Lloyd is President of Lloyd's T.A.B Pty Ltd, from Queensland Australia, Lloyd, a TAB CP, is an active member of the TAB Committee, NEBB YPN and the NEBB Australia Board of Directors.

TRACK 2: CPT AND IAQ

12:30 pm – 2:00 pm Phoenix Controls Air Valves as Used in Critical Environments



SPEAKERS: James Barrette – Sales Support Engineer, Phoenix Controls
Chris Miller – Operations Manager, The Kirkman Oliver Company

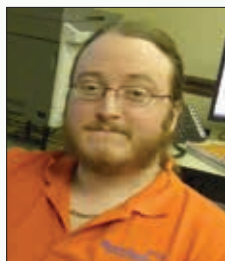
We will discuss the Phoenix Controls Venturi air valve, the flow metering technology, mechanical pressure independence, accuracy and repeatability, ease of startup, no maintenance design, and why Phoenix Controls does not measure airflow to control their valves.

SPEAKERS BIO: James Barrette has worked for Phoenix Controls for 13 years. Spending several years in product support and field startup, then several years in Marketing, he is now the sales support engineer in charge of technical sales training, customer visits, and competitive analysis.

Chris Miller has worked in the HVAC field for 32 years and has been the exclusive rep for the Phoenix Controls product line for the past 19 years.

TRACK 3: BUSINESS AND LEADERSHIP PRACTICES

12:30 pm – 2:00 pm #1 Cyber Crime and Security – The Impact that Cyber Intrusion Can Have on Your Business



SPEAKER: Derek Hedrick – President, Ameritech Computer Consultants, Inc.

Cybercrime damages are predicted to cost upwards of \$6 trillion dollars annually by 2021. Cybercrime now accounts for more than 50% of all crime in the US with 78% of surveyed corporations being affected by a successful cyber attack in 2018. For small businesses 60% fold within.

SPEAKER BIO: Derek spent 6 years in the US Naval Submarine Service as a Nuclear Health Physics Technician. In 1999 Derek was introduced to the TAB industry and has spent the last 20 years developing TABopts, Project Management and TAB Reporting software. At the same time providing complete IT Support Services.

2020 NEBB Conference Advance Program

TECHNICAL TRACK SESSIONS: FRIDAY, APRIL 3 ■ 2:15 PM - 3:45 PM

TRACK 1: BSC AND TAB

2:15 pm – 3:45 pm

HVAC Air Leakage Testing

SPEAKER: Mark Terzigni – Director of Engineering, SMACNA



Learn how to calculate the correct pass fail criteria for leakage testing and why leakage class is the correct approach. Understand where the leakage class concept comes from and how to "compare" it to other pass fail criteria.

SPEAKER BIO: As Director of Engineering, Mark Terzigni oversees the development of SMACNA's technical manuals and applications ("Apps"). Prior to joining SMACNA, Mark was a Technical Service Engineer for McGill AirFlow, addressing technical issues regarding duct construction, design, sound attenuation, and leak testing. Mr. Terzigni graduated from The Ohio State University with a B.S. in Mechanical Engineering."

TRACK 2: CPT AND IAQ

2:15 pm – 3:45 pm

Efficiently Conditioning High Quantities of Outdoor Air

SPEAKER: Nicholas Pearce – Application Engineer, Greenheck Fan Corporation



Conditioning outdoor air is an expensive process, but operational costs can be minimized through proper system selection and design. Discussion will focus on Dedicated Outdoor Air Systems (DOAS), which are more efficient than conventional Variable Air Volume (VAV) systems. Other options for increasing system efficiency are discussed.

SPEAKER BIO: Nick Pearce is an Application Engineer with the Dedicated Outdoor Air Systems (DOAS) group at Greenheck. Nick is actively involved in product development, technical and application support, product sales, and marketing. He works closely with Greenheck mechanical representatives to support energy recovery and DOAS products.

TRACK 3: BUSINESS AND LEADERSHIP PRACTICES

2:15 pm – 3:45 pm

#2 Cyber Crime and Security – The Impact that Cyber Intrusion Can Have on Your Business

SPEAKER: Derek Hedrick – President, Ameritech Computer Consultants, Inc.



Cybercrime damages are predicted to cost upwards of \$6 trillion dollars annually by 2021. Cybercrime now accounts for more than 50% of all crime in the US with 78% of surveyed corporations being affected by a successful cyber attack in 2018. For small businesses 60% fold within.

SPEAKER BIO: Derek spent 6 years in the US Naval Submarine Service as a Nuclear Health Physics Technician. In 1999 Derek was introduced to the TAB industry and has spent the last 20 years developing TABopts, Project Management and TAB Reporting software. At the same time providing complete IT Support Services.

2020 NEBB Conference Advance Program

TECHNICAL TRACK SESSIONS: SATURDAY, APRIL 4 ■ 9:45 AM - 11:15 AM

TRACK 1: BSC AND TAB

9:45 am – 11:15 am

Understanding Variable Frequency Drive Applications

SPEAKER: Jeff Smith – Director of Drive Sales & Aftermarket Technical Support, Mechanical Resource Group



Creating a learning environment that covers variable frequency drive applications that occur within the test and balance requirements. Gain a comfort level of interacting with VFD's to meet the challenge of controlling the device without building automation being present. Understand the functions of the drive and it's influence of the electric motor.

SPEAKER BIO: Jeff Smith has been in the variable frequency drive environment for 38 years and has been an authorized service provider for ABB, Hitachi, Square D and Yaskawa for 30 years. He has a degree in Industrial electronics from L.A Trade tech and is a master electrician. He has designed multiple integrated VFD applications for US Army corps of engineers as well as multiple HVAC OEM's.

TRACK 2: CPT AND IAQ

9:45 am – 11:15 am

Cannabis and Clean Rooms

SPEAKER: Peter Maguire – Vice President System Applications, Lighthouse Worldwide Solutions



In this session we will cover how the cannabis industry is utilizing clean rooms, controlled environments and clean room protocols to grow plants indoors.

SPEAKER BIO: As Vice President of System Applications for Lighthouse Worldwide Solutions, Peter has provided contamination control training to hundreds of companies and thousands of engineers in the pharmaceutical, medical device, electronics and cannabis industries. Peter holds a 5th degree black belt in Tae Kwon Do from Jung SuWon martial arts academy.

TRACK 3: BUSINESS AND LEADERSHIP PRACTICES

9:45 am – 11:15 am

NEBB Firm and Individual Compliance Panel

SPEAKERS: Chapter Affairs Committee

Don Hill – President, AccuTec Services, Inc.

Glenn See – Chapter Affairs Chairman, TAB Technologies

Jeffrey Schools – President, Fisher Balancing

Tiffany Suite – Executive Vice President, NEBB

The purpose of this panel is to bring clarity based on past and current experiences resolving compliance issues with the governing documents.

2020 NEBB Conference Advance Program

TECHNICAL TRACK SESSIONS: SATURDAY, APRIL 4 ■ 12:15 PM - 1:45 PM

TRACK 1: BSC AND TAB

12:15 pm – 1:45 pm **TAB Specifications**

SPEAKERS: Tom Hanlen – Design Engineer

Jon Sheppard – Owner and President, Atlantic Testing, Inc.

Dane Richards – Owner

Amber Ryman – Mechanical Contractor

This panel will address issues with current TAB specifications across the country. We will take excerpts from actual specifications and provide different perspectives as to what each section is trying to accomplish and what the difficulties in compliance with some specification requirements.

TRACK 2: CPT AND IAQ

12:15 pm – 1:45 pm **Cleanroom Recovery Testing and Discoveries**

SPEAKER: Matt Lemieux – Senior Staff Engineer, Daldrop SBB, LLC.



A brief history of cleanroom recovery testing is presented, followed by technological advancements in methodology which are defining best practices. Theoretical recovery rates are detailed and compared with empirical data. Distinctions are made between room recovery and sample location recovery. A case study of improved recovery rates of twist (swirl) diffusers in cleanroom design is discussed. Conventional industry practices are challenged.

SPEAKER BIO: Matthew Lemieux has over 38 continuous years of field experience as a biological safety cabinet certifier, air and water balancer & cleanroom certifier. Mr. Lemieux has a B.S. in mechanical engineering from Northeastern University, a Massachusetts E.I.T. registration, an associate's degree in electronics engineering from ITT Technical Institute, a former Massachusetts HVAC license,

TRACK 3: BUSINESS AND LEADERSHIP PRACTICES

12:15 pm – 1:45 pm **Chart Your Course to Effective Leadership**

SPEAKER: Jennifer Donahue – President/Owner, JL Donahue Engineering, Inc.



The genesis of leadership starts with knowing yourself and knowing your people. Leaders understand their own strengths and challenges, and outward projections of these qualities. They also focus on inclusion, engagement, and growth of those under their direction and in doing so, grow the organization. This session will provide easy and useful techniques for actionable practices within everyday work environments.

SPEAKER BIO: Dr. Jennifer Donahue is the President/Owner of JL Donahue Engineering, with 23 years of experience focused on managing and supporting a variety of civil geotechnical and seismic projects. She is also a combat veteran and is serving as a Captain in the US Navy Reserves in the Civil Engineer Corps.

2020 NEBB Conference Advance Program

TECHNICAL TRACK SESSIONS: SATURDAY, APRIL 4 ■ 2:00 PM - 3:30 PM

TRACK 1: BSC AND TAB

2:00 pm – 3:30 pm Thermal Imaging and Selecting the Right Camera

SPEAKER: Phil Emory – BET CP, Neudorfer Engineers



Thermal Imaging Cameras have become more powerful in their day-to-day applications, and more powerful in their internal workings. This course is a snap shot in time to see where the technology is taking us and giving a hand in trying to select the camera that best fits your needs.

SPEAKER BIO: In 2008 Phil was certified as a Level 1 Thermal/Infrared Thermographer per the guidelines of the American Society for Nondestructive Testing (ASNT). In June of 2009 he added certification for Thermal/Infrared Thermography Level 1 for Buildings and in September of 2009 he obtained his Level 2 certificate for Thermal/Infrared Thermography.

TRACK 2: CPT AND IAQ

2:00 pm – 3:30 pm Lab Controls System Retrofit

SPEAKER: Donald Hill – President, AccuTec Services, Inc.



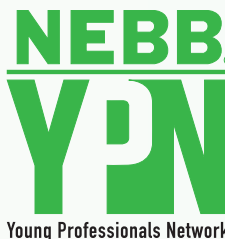
Laboratory controls retrofit and upgrade at the Stowers Institute for Medical Research Utilization of the mock-up to determine system programming and additional functions to incorporate energy savings opportunities Utilization of the mock-up to determine schedule for implementation Integration into the building management system Utilization of new points to monitor system operation and incorporation into a continuous commissioning application.

SPEAKER BIO: Don is the President of AccuTec Services, Inc. providing TAB, Commissioning and FHT and CPT Services. Don is a Mechanical Engineer with 40 years experience in the design and construction industry. He is past President of NEBB and is the past chairman of the CPT Committee for NEBB.

TRACK 3: BUSINESS AND LEADERSHIP PRACTICES

2:00 pm – 3:30 pm A Clear Vision: What to Look Out for on Projects

SPEAKER: Young Professional Network



In this session, the NEBB YPN Ad Hoc Committee will provide several examples of what to look out for on projects so attendees will have a clear vision to see issues while they can still be addressed.

SPEAKERS BIO: The NEBB YPN are an articulated group of five guys spanning the globe. the desire for excellence and industry leading initiatives drives these guys to find, research and share the latest opportunities in their relative disciplines to keep NEBB way above the rest. With enthusiasm, passion and energy forming some of the key ingredients to this group. they are seeing amazing things unfold around them. the recognition of the vision from Jean-Paul Leblanc from the start of this group and with the incredible input from past presidents Jim Kelleher, Don Hill and Jim Whorton, this group continues to grow from strength to strength.

2020 NEBB Conference Information

The Greenbrier – America's Resort
 101 W Main Street ■ White Sulphur Springs, WV 24986 ■ (855) 453-4858



NEBB's Discounted Single/Double Rate: \$199.00

To ensure the NEBB discounted room rate, reservations must be made by February 27, 2020 by 5:00 pm EST. Group rooms may sell out, so don't delay! Rooms are subject to availability. Reservations made after February 27, 2020 will be on a space-available-and-prevailing-rate basis.

2020 NEBB Conference Fees

EARLY BIRD CONFERENCE REGISTRATION

- Discounted Rate only until December 31
- Includes all the benefits of Full Conference Registration

FULL CONFERENCE REGISTRATION

- Opening Session on April 2
- Get Acquainted Reception on April 2
- Two Full days of Technical Track Sessions (April 3 and 4)
- Breakfast, Lunch, Morning and Afternoon Breaks (April 3 and 4)
- Vendor Reception and Prize Giveaway on April 4
- Closing Session on April 4

GUEST REGISTRATION

- Opening Session on April 2
- Get Acquainted Reception on April 2
- NEBB Guest Lunch and Bunker Tour on April 2
- Vendor Reception and Prize Giveaway on April 4
- Closing Session on April 4

GUEST REGISTRATION (MINOR) 18 AND UNDER

- Opening Session on April 2
- Get Acquainted Reception on April 2
- NEBB Guest Lunch and Bunker Tour on April 2
- Vendor Reception and Prize Giveaway on April 4
- Closing Session on April 4

*More details to come

Fees as of December 1, 2019

\$875

\$1000

\$300

\$150

The Greenbrier: America's Resort Activities

With more than 55 indoor and outdoor activities available, The Greenbrier offers something for guests of all ages and interests. Try some of the most popular activities listed below while staying at The Greenbrier and view the entire list of activities on their website!

Gun Club: Sporting Clays and Trap and Skeet



Fishing: Howard's Creek Fly Fishing



Jeep Driving Adventure: Off Road Exploration



Falconry: Learn the Ancient Sport of Kings



Horseback Riding: Private and Group Rides



Mountaineer Experience: Archery, Tomahawks



The Greenbrier: America's Resort Guest Activities

Bring your guest along to NEBB's Annual Conference this year!

The guest registration is a great value which includes admission to the following activities:

- NEBB Guest Lunch and Bunker Tour
- Opening Session
- Get Acquainted Reception
- Vendor Reception and Prize Giveaway
- Closing Session

Bunker at The Greenbrier Resort

The declassified Bunker at The Greenbrier is a must-see experience that takes you behind the scenes and walks you through a fascinating period in the resort's history. Carved deep into the mountainside beneath our West Virginia Wing is an emergency Cold War fallout shelter. Once a top secret U.S. government relocation facility for Congress, The Bunker is now open to anyone interested in reliving a legendary piece of The Greenbrier history. Bunker Tours provide a unique and in-depth look behind the hidden doors and let you explore an aspect of The Greenbrier that no other resort can claim.



2020 NEBB Conference Payment Information

PAYMENT INFORMATION

Online registration is payable by credit cards (American Express, MasterCard, Visa and Discover) or check. If paying by check, please make payable to the NEBB Main Office and mail the check along with a 2020 NEBB Annual Conference Paper Registration Form.

Attention: NEBB – Annual Conference Registration • 8575 Grovemont Circle, Gaithersburg, MD 20877

OPTIONAL ITEMS

Activity	Date/Time	Cost
23rd Annual Golf Tournament	April 2, 8:30 am – 3:00 pm	\$195
Golf Club Rental	April 2, Pick up at Golf Course	\$90
NEBB Logo Polo Shirt (S – XL)	Pick up at Conference Registration Desk	\$35
NEBB Logo Polo Shirt (2XL – 5XL)	Pick up at Conference Registration Desk	\$40
BET Seminar	March 30 – 31	\$800
Optional NEBB Exam Day	April 1	Contact certification@nebb.org for details and pricing

CANCELLATION POLICY

Written request received by March 20, 2020	Full cancellation less a 25% admin fee
Written request received after March 20, 2020	Nonrefundable
No-show for any reason	Nonrefundable

CONTINUING EDUCATION CREDITS (CECs)

- NEBB Certified Individuals registered for the 2020 Annual Conference will receive continuing education credits (CECs) for attending technical and educational sessions.
- Electronic scanning will be done for each session in order to verify attendance and allocate the appropriate number of CECs to the CP or CT.
- The 2020 Conference Program Guidebook will have the number of CECs awarded listed by each session
- CECs obtained by attending sessions at the annual conference can be used for submission for NEBB recertification requirements.
- CECs are awarded only for educational or technical sessions.



2020 NEBB Annual Conference

A Clear Vision to the Forefront of a Changing Environment

2020 NEBB Conference Registration

Please visit our 2020 Conference website: nebb.cvent.com

- Registration form and payment must be received and confirmed by NEBB Main Office by Friday, March 20, 2020
- Each attendee complete 1 registration form.
- After March 20, 2020, please register online.

Name (DISPLAYED ON BADGE): _____ Email Address: _____

Company Name: _____ Phone Number: _____

Address: _____ ADA/Dietary Restrictions: _____

City/State/Zip: _____

ITEM DESCRIPTION / FEES	QUANTITY		TOTAL
Early Bird Full Conference Registration: \$875 (Expires Dec 31)		One Per Sheet	
Full Conference Registration: \$1000			
Thursday ONLY Registration: \$175			
Friday ONLY Registration: \$450			
Saturday ONLY Registration: \$450			
OPTIONAL ITEMS		Shirt Size / Rentals	
Guest Registration: \$300			
Minor Guest Registration: \$150			
NEBB Polo Shirt (S – XL): \$35 *Please indicate Shirt Size (Small, Medium, Large or X-Large)			
NEBB Polo Shirt (2XL – 5XL): \$40 *Please indicate Shirt Size (2XL, 3XL, 4XL or 5XL)			
Golf Tournament Registration: \$195			
Golf Tournament Club Rentals: \$90 *Please indicate Left-handed Clubs or Right-handed Clubs			
Golf Polo Shirt Size (Included in golf fee) *Please indicate Shirt Size (Small, Medium, Large, X-Large or 2XL)			

Payment Method: ☐ Visa ☐ MasterCard ☐ AMEX

Check: Make payable to NEBB. Conference registration is NOT confirmed until payment has been received.

Total Amount Due: _____ Date: _____

Name on Card: _____

Credit Card Number: _____ Expiration Date: _____

Signature: _____ Security Code: _____

NEBB Cancellation Policy: A 25% Cancellation Fee will be applied if written request is received/approved by March 20, 2020. After March 20, 2020 cancellation requests are non-refundable.

NEBB Main Office, 8575 Grovemont Circle, Gaithersburg, MD 20877

Chapter Updates

Florida EBB

Terry Wichlenski, Chapter Coordinator

The Florida EBB is excited to announce its 39th Recertification Seminar & Annual Meeting at the Omni ChampionsGate - Orlando from April 30 through May 1, 2020. Registration is now open. If you need a registration form, please contact FEBB Chapter Coordinator Terry Wichlenski for additional information.

Our next NEBB TAB Practical Exam will be March 20th at our Jacksonville Test Site, followed by another June 6th at either Largo or Deerfield Test Site, and one last planned exam on September 11 or 12, 2020. For additional information, please contact Terry, FEBB Chapter Coordinator at febbcoordinator@gmail.com or 727-240-4254.



The Omni Champions Gate Hotel in Orlando, FL

MAEBA

Trish Casey, Chapter Coordinator

MAEBA will be holding its Semi-Annual Meeting on April 24, 2020 at the Radisson Hotel in Trevose, PA. Everyone is welcome to join us at the Semi-Annual Meeting, which will begin with a luncheon and vendor display, followed by educational speakers. The meeting fulfills the three-hour requirement for Certified Technicians and can also be used toward the six-hour requirement for Certified Professionals.

The MAEBA Chapter would like to congratulate Jeffrey Schools of Fisher Balancing Company on being elected 2019-2020 NEBB National President. Jeff has been a NEBB Certified Professional for thirteen years and has served on the MAEBA Technical Committee since 2008 and the MAEBA Board of Directors since 2011. Thank you, Jeff for your dedication to MAEBA and NEBB.

Rocky Mountain NEBB

Stuart MacGregor, Chapter Coordinator

Rocky Mountain NEBB will be presenting the closing presentation at the Spring 2020 Rocky Mountain ASHRAE Technical Conference. Tentatively, the topic is "Information a Valid Balance Report Should Have and How to Recognize a Bad or False Balance Report."

North Central NEBB

Ashley Lang, Chapter Coordinator

North Central NEBB Chapter's next chapter meeting will be held March 12, 2020. The agenda will include the following:

- financial statement as of February 28, 2020
- speakers and topics for our 2020 Recertification Seminar
- 2020 Board of Directors
- our seminar Co-Chair
- who will be attending the 2020 NEBB Annual Conference in West Virginia

Southern California EBB

James Rosier, Chapter Coordinator

SoCal EBB will be holding its Annual Meeting on May 1, 2020 from 7:30 a.m. to 4:00 p.m. at the Diamond Bar Golf Course in Diamond Bar, CA. The cost to attend the event is \$100 per person for SoCal Chapter firms and \$200 per person for non-SoCal Chapter firms. Space is limited, so contact Jim Rosier for registration information at 714-998-6322.

Mid-South EBB

Ginger Slaick, Chapter Coordinator

MEBB continues to grow, welcoming six new certified firms in 2019 – AMA Consultants and Bernhard TME in Birmingham, AL; Environmental Testing Service in Columbus, OH; MGM Associates in Marshall County, AL; National TAB Southeast; and Research Air Flo in Charleston, SC.

MEBB held its first YPN meeting in Alabama on December 17, 2019 thanks to the efforts of Craig Phillips, NEBB's YPN Chapter Liaison. The next meeting is scheduled for March 17. If you are interested in being a part of the MEBB YPN, mark your calendar and plan to attend the March meeting. Meeting details will be available closer to the meeting date.

MEBB will host its 2020 Recertification Seminar and Vendor Expo September 19-20 at The Battle House Renaissance Mobile Hotel & Spa in Mobile, AL. Plans are underway for a full schedule of technical and business sessions for CPs and CTs. A fieldtrip is also being planned for a behind-the-scenes facility tour of GulfQuest National Maritime Museum. For additional information on attending the Recertification Seminar or becoming a vendor at the Annual Vendor Expo, please contact MEBB at gslaick@midsouth-ebb.com or 678-407-2754.



The Battle House Renaissance Mobile Hotel & Spa in Mobile, AL

Tennessee EBB

William Bailey, Chapter Coordinator

On December 6, 2019, the Tennessee EBB chapter held its end of year meeting in Jackson, Tennessee. At that meeting, two of our NEBB Certified Professionals expressed interest in getting more involved with NEBB on a national level.

Rob Ratliff is looking into marketing with Roger Wehby assisting as a new Chapter Affairs Committee Board member. The chapter appreciates both gentlemen sacrificing their time to support these positions for NEBB National.

The chapter is looking to have our Continuing Education Seminar sometime between the end of April and the first part of May in Memphis, TN. The topics reviewed for CECs include AC-VFDs, LG, and Trane systems. Topics are to be determined by end of January, as well as local vendors which will be submitted to NEBB for approval.

The chapter currently has a total of 11 CPs and 6 CTs, and is looking to have more in the near future. Nashville Machine Company is looking into having two additional professionals take the Retro-Commissioning course to become Certified Professionals in that discipline.

We also want to express a special thanks to Tiffany Suite, EVP for helping us with keeping the Chapter Coordinator/TCC in line with what was taking place with firm and individual certification items. The process with Certelligence has made it a lot easier to get firms and individuals on the right page in regard to CECs and certification requirements. ●



Left to Right: front row- John Fisher, Otto Title, Andrew Tittle, Chris Palmer, Walter McCauley; back row - Wayne Ayers, Rob Ratliff, Roger Wehby. Chapter Members Not Pictured: William Bailey, Paul Curtis, Rick Botto & Andy Burk.

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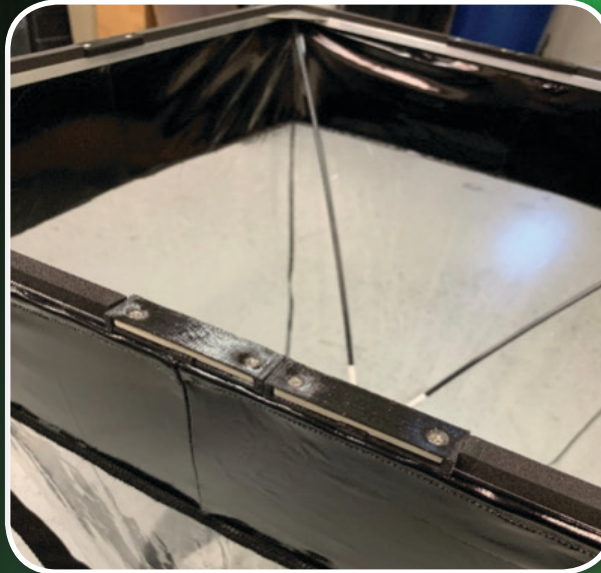
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NEBB 2020 Technical Seminars Schedule

March 2020

Cleanroom Performance Testing (CPT)

March 9-11, 2020

(All Day Event)

NEBB TEC, Gaithersburg, MD

Registration Deadline: February 24, 2020

Building Enclosure Testing (BET)

March 30-31, 2020

(All Day Event)

The Greenbrier Resort, Sulphur Springs, WV

Registration Deadline: March 16, 2020

May 2020

Building Systems Commissioning Technician (BSC CxCT)

May 31 – June 2, 2020

(All Day Event)

NEBB TEC, Gaithersburg, MD

Registration Deadline: May 15, 2020

June 2020

Fume Hood Performance Testing (FHT)

June 1-2, 2020

(All Day Event)

Labconco, Kansas City, MO

Registration Deadline: May 18, 2020

Testing, Adjusting, and Balancing (TAB)

June 4-7, 2020

(All Day Event)

NEBB TEC, Gaithersburg, MD

Registration Deadline: May 21, 2020

July 2020

Building Systems Commissioning (BSC)

July 21-23, 2020

(All Day Event)

NEBB TEC, Gaithersburg, MD

Registration Deadline: July 7, 2020

September 2020

Cleanroom Performance Testing Seminar

September 21-23, 2020

(All Day Event)

NEBB TEC, Gaithersburg, MD

Registration Deadline: September 7, 2020

Sound & Vibration Measurement

September 28- October 2, 2020

(All Day Event)

Total Dynamic, Deerfield Beach, FL

Registration Deadline: September 14, 2020

October 2020

Retro-Commissioning of Existing Buildings (RCx)

October 12-15, 2020

(All Day Event)

NEBB TEC, Gaithersburg, MD

Registration Deadline: September 28, 2020

Testing, Adjusting, and Balancing (TAB)

October 18-21, 2020

(All Day Event)

IMI Facilities, Roswell, GA

Registration Deadline: October 4, 2020

November 2020

Fume Hood Performance Testing (FHT)

November 2-3, 2020

(All Day Event)

Labconco, Kansas City, MO

Registration Deadline: October 19, 2020



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**2020 NEBB
Annual Conference
Registration
Is Open!**

**April 2-4,
2020**

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Miss It!**



The Greenbrier Resort, WV