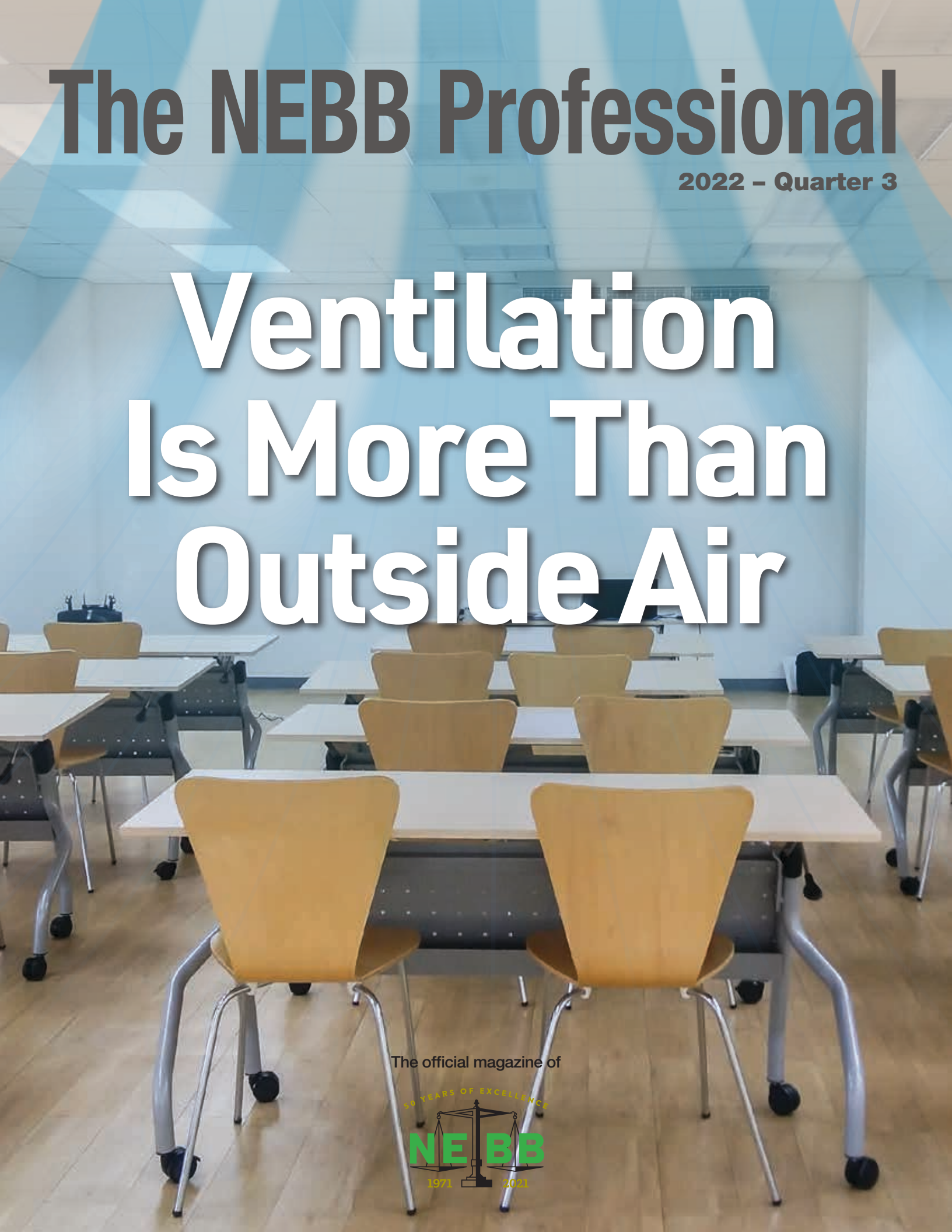
The NEBB Professional

2022 – Quarter 3

Ventilation Is More Than Outside Air



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Contents

Quarter 3 – 2022

Features

The NEBB Professional is a quarterly magazine published by NEBB. 8575 Grovemont Circle, Gaithersburg, MD 20877 Tel: 301.977.3698 Email: communications@nebb.org

PRESIDENT'S MESSAGE

I am now on my final quarterly article, and my presidential year is more than half over. Where has the time gone? Every past president has told me that the year would be over and gone in the blink of an eye, and they were not wrong.

By the time you are reading this, all of the arrangements for the Charleston conference will be done, venues set, schedule locked down, and all the food and entertainment lined up and ready to go. We are going to have a great time! The NEBB staff has worked tirelessly to make this conference happen - we started on this way back in 2020 just as COVID ramped up. That didn't stop our team though! They persevered and got it all done. And now we are ready for YOU! Make sure to sign up as soon as registration opens so you don't miss out.

Thanks to the local MEBB Chapter, we will have a fishing tournament this year. This will be a first come, first served sign up as boats are limited. It will be an inshore Red Drum adventure! We will also have golf on Thursday November 3rd as usual. A huge thank you to Jeff Schools for helping to get this all set up for us. The courses in South Carolina are truly beautiful!

We went back to holding a mid-year meeting this year and the results were outstanding. Having all the committees at the same site without the additional worries of technical sessions, events, and other duties provided our teams the focused opportunity they need to get their own work done, as well as work with other committees on joint venture items for seminars, the NEBB Learning Center (NLC), and publications. We were also able to provide training by staff to all the volunteers, in person, which is hard to do without a meeting and venue like this. I want to thank all of our volunteers for the incredible work they are doing. You are appreciated more than you know!

Lastly, I would like to thank the chapters and their coordinators for such great work this year communicating with me, providing critical feedback, and working together to make sure our chapters are strong and thriving. Our future is bright, and you are a large part of this organization's success!

As we begin to shift back to "normal", continue sharing NEBB, promoting NEBB, and being NEBB. I hope to see you all in November!

Jon

Jon Sheppard
NEBB President

MENSAJE DEL PRESIDENTE

Este es mi artículo trimestral final y ya ha transcurrido más de la mitad de mi año como presidente de NEBB. ¿A dónde se fue el tiempo? Cada presidente anterior me ha comentado que el año va a pasar e irse en un parpadeo de ojos y no estaban equivocados.

Para el momento en que usted este leyendo este artículo, todos los arreglos para la conferencia de Charleston van a estar realizados, las ubicaciones definidas, el cronograma establecido, la alimentación elegida y el entretenimiento alineado y listo para empezar. ¡Vamos a pasarla muy bien! El staff de NEBB ha trabajado incansablemente para hacer esta conferencia una realidad – empezamos con este evento en el 2020 justo cuando el COVID iba en aumento. ¡Sin embargo, eso no detuvo a nuestro equipo! Ellos perseveraron y lograron completar todo. ¡Y ahora estamos listos para usted! Asegúrese de registrarse tan pronto como se abra el proceso de registro de tal forma que no se pierda esta oportunidad.

Gracias al Capítulo local MEBB, este año vamos a tener un torneo de pesca. Este va a seguir el proceso del primero en llegar, primero en ser registrado ya que el número de embarcaciones es limitado. ¡Va a ser una aventura costera para pescar Tambor Rojo (inshore Red Drum adventure)! Como ya es usual, también vamos a tener golf el día jueves 3 de noviembre. Un gran agradecimiento a Jeff Schools por ayudar a coordinar todas estas actividades para nosotros. ¡Los campos de golf en Carolina del Sur son realmente hermosos!

Este año volvimos a tener una reunión de medio año y los resultados fueron sobresalientes. Tener a todos los comités en el mismo lugar, sin la preocupación adicional de las sesiones técnicas, eventos y otras responsabilidades, le permitió a nuestros equipos la oportunidad de enfocarse en completar su propio trabajo, así como en trabajar con otros comités en esfuerzos colaborativos para seminarios y el NEBB Learning Center, así como publicaciones. También tuvimos la oportunidad de proveer entrenamiento de forma personalizada para todos los voluntarios por parte del staff, lo cual es difícil de realizar sin una reunión y ubicación como

esta. Quiero agradecer a todos nuestros voluntarios por el increíble trabajo que están llevando a cabo. ¡Ustedes son más apreciados de lo que creen!

Finalmente, me gustaría agradecer a todos los Capítulos y sus coordinadores por el excelente trabajo realizado este año comunicándose conmigo, brindando retroalimentación critica, y trabajando en conjunto para asegurar que nuestros Capítulos continúen siendo fuertes y prósperos. ¡Nuestro futuro es brillante, y ustedes son una gran parte de este éxito organizacional!

Conforme empezamos a regresar a la "normalidad", continuemos compartiendo NEBB, promocionando NEBB, siendo NEBB. ¡Espero verlos a todos en noviembre!

Jon

Jon Sheppard
Presidente de NEBB

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CONTRIBUTORS

William Bailey has been a member of NEBB since 1997 and a member of ASHRAE since 2003. Hobbies are fishing for largemouth and smallmouth bass on the Tennessee River/Kentucky Lake. Loves teaching classes related to HVAC for Associated Builders and Contractors and Service Group at NMC.

Derek Hedrick, Ameritek, has worked with Sheet Metal and TAB companies to develop streamline project management products to support their industry, at the same time providing a complete line of network security products and services through his computer consulting division.

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Jeff Schools is the Past President of NEBB and has taken the new role of the NEBB Technical Director.

Kerri Souilliard is an independent contract writer for NEBB. For more information on Kerri, visit: www.kreativstrategy.com.

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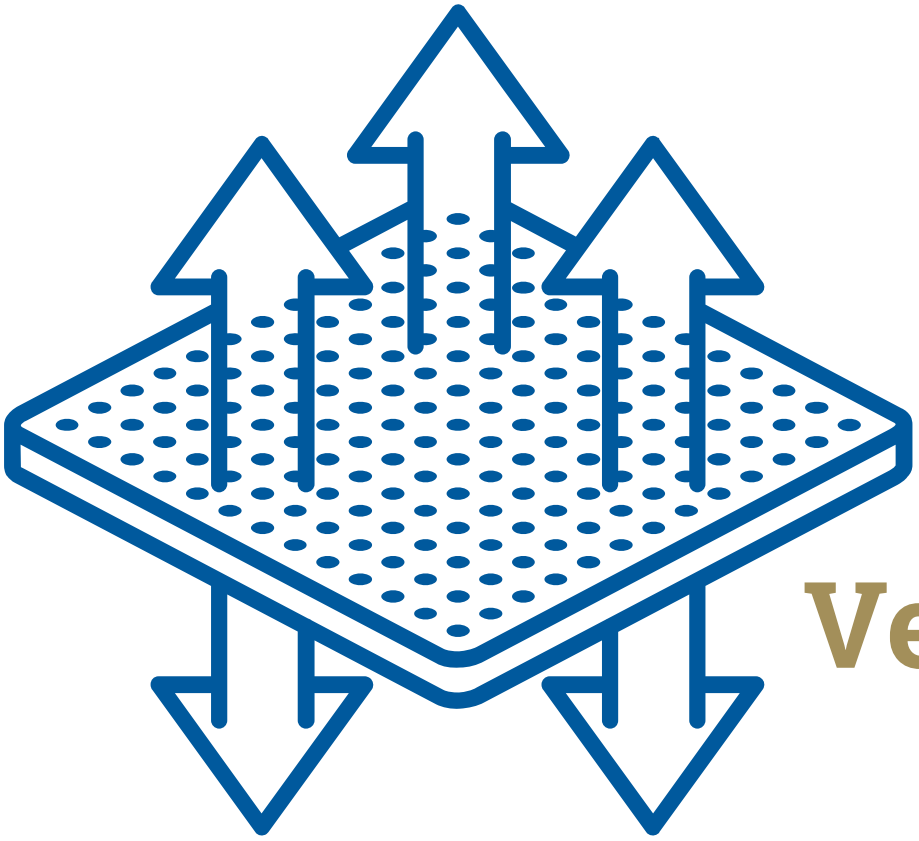


Ventilation is More than Outside Air

By Rodney Hinton

The purpose of this article is to challenge conventional thinking about ventilation and create change to make our communities safer and our built environment a better place to work and live. Throughout my 33-year career in the Testing, Adjusting, Balancing and Commissioning of HVAC systems, there have been several cycles where the industry has been agitated by Indoor Air Quality (IAQ). Some building owners take it more seriously than others because of past experiences in costly modifications to unhealthy buildings. Others have not had that experience and therefore do not take the necessary steps to proactively maintain air quality.

A school district that was recently recognized as Best-in-Class in four categories by the US Department of Energy's Office of Energy Efficiency & Renewable Energy learned this lesson in 1999 (https://efficienthealthyschools.lbl.gov/sites/default/files/2022-04/EHSc_1st%20Round%20Recognition_LetterheadWord.pdf). That year, this school district spent $7.7 million dollars to "gut and rebuild" an elementary school due to IAQ problems (https://www.achrnews.com/articles/85439-sick-schools-may-hold-iaq-remediation-opportunity).

In short, the lesson learned from this costly repair is that the "V" in HVAC (Ventilation) is an important driver of occupant satisfaction and it is better to be proactive when designing, installing, testing, adjusting, balancing, and commissioning the HVAC systems than it is to take a wait-and-see approach.

The lesson learned... is that the "V" in HVAC (Ventilation) is an important driver of occupant satisfaction and it's better to be proactive....

This school district is to be applauded for their initiative-taking approach to efficient and healthy buildings.

The district hired a former National Environmental Balancing Bureau (NEBB) certified Testing Adjusting and Balancing professional to work on staff as the Director of Energy Management. The district recognized the importance of controlling its energy costs (via a NEBB certified professional), but not at the expense of IAQ. The district mentions in its Best-In-Class citation:

> *"A TAB Professional is utilized by the school district when installing new HVAC equipment, performing HVAC retrofit, conducting HVAC commissioning or general inspection and maintenance. The district tested HVAC airflow and system capacity, reviewed documentation on HVAC system design values relied on facilities working knowledge of HVAC system, consulted with HVAC contractors, and consulted with filter suppliers to determine the highest MERV filtration possible without adversely affecting HVAC equipment. The HVAC system TAB and commissioning/recommissioning, typically costing 3% of the initial mechanical system costs. Key lessons learned: HVAC digital controls are often initially programed based on vendors' previous projects. New systems need testing and verification through trending beyond the warranty period."*

Throughout my career, I have heard may times "You can only expect what you inspect," "You can only manage what you measure," and "To assume will make an *** out of you and me". The value of a certified professional, with hands-on field experience, is important.

To aid in this effort, it is vital to understand a few valuable definitions and discussion points to help articulate the value associated with efficient healthy buildings. Some of these will make you go "Wow!" while some will make you question "Why?" And that's the goal.

Ventilation: The exchange of air between the lungs and the atmosphere so that oxygen can be exchanged for carbon dioxide in the alveoli (the tiny air sacs in the lungs).

This medical definition of ventilation is very clear in stating what ventilation is and why it is important. In its simplest form ventilation is an exchange of air and the atmosphere. The average adult breaths, inhales, and exhales, twelve to sixteen times per minute. Ventilation and respiration are two processes that are involved in supplying oxygen to the body. The main difference between ventilation and respiration is that ventilation is the provision of fresh air into the lungs while respiration is the gas exchange between the body and the external environment. Respiration rates may increase with fever, illness, and other medical conditions as well as exercise. Therefore, we "off gas" at a greater rate when we are sick, and we need to remove these harmful gases as close to the source as possible and not spread them around the room or building.

The ASHRAE definition of ventilation is "The process of supplying air to or removing air from a space for the purpose of controlling contaminant levels, humidity, or temperature within the space." The quality of ventilation will deteriorate over time when one or more of these processes is inadequate, such as dirty filters, improperly installed filters, damaged filters, a reduction

of outside air, or the improper distribution of supply, return and/or outside air.

Acceptable indoor air quality (IAQ): ASHRAE standard 62.1-2019 Ventilation for Acceptable indoor Air Quality - "Air in which there are no known contaminants at harmful concentrations, as determined by cognizant authorities, and with which a substantial majority (80% or more) of the people exposed do not express dissatisfaction."

Is this an acceptable definition of the air we want entering our bodies? Would we drink water if only 20% of the people claimed to be dissatisfied with the taste, smell, color, or headaches? During the COVID-19 pandemic people refused to go to work out of fear of getting sick from the air they breathe. How many business, schools, or manufacturing facilities had a 20% infection rate during this period? The EPA estimates that Sick Building Syndrome accounts for $60 billion in lost revenue per year and it's estimated that $220 billion is lost in worker productivity due to absenteeism and employee sickness.

Breathing Zone: ASHRAE standard 62.1-2019 "the region within an occupied space between planes 3 inches and 72 inches (75 and 1800 mm) above the floor and more than 2 feet (600 mm) from the walls or fixed air-conditioning equipment". Having clean air in the breathing zone is critical to keeping the human body healthy and productive.

Air Changes (ACH): Air Changes per Hour is a measurement of how many times a volume of air within a space will be conditioned and filtered before being returned into the space. Theoretically, the air never leaves the space and only gets reconditioned.

Air Exchanges (AXH): Air Exchanges per Hour is a measurement of how many times a volume of air within a space will be added (outside Air) or removed (Exhaust Air) from the space. Outside air may be delivered to a space as 100% outside air or as a percentage of total air being supplied by the Air Handing Unit.

We hope that these definitions will make you think deeply about ventilation and why we should strive for clean air in buildings and not just acceptable IAQ. The United States White House Office of Science and Technology (OSTP) along with the U.S Environmental Protection Agency (EPA) recently launched the "Clean Air in Buildings Challenge." Ventilation is more than increasing outside air. If the outdoor air is not properly distributed to the breathing zone or the return air path is cross contaminating the breathing zone, then are we accomplishing the ventilation intent? Dr. Alondra Nelson with the OSTP stated on a March 29, 2022 panel:

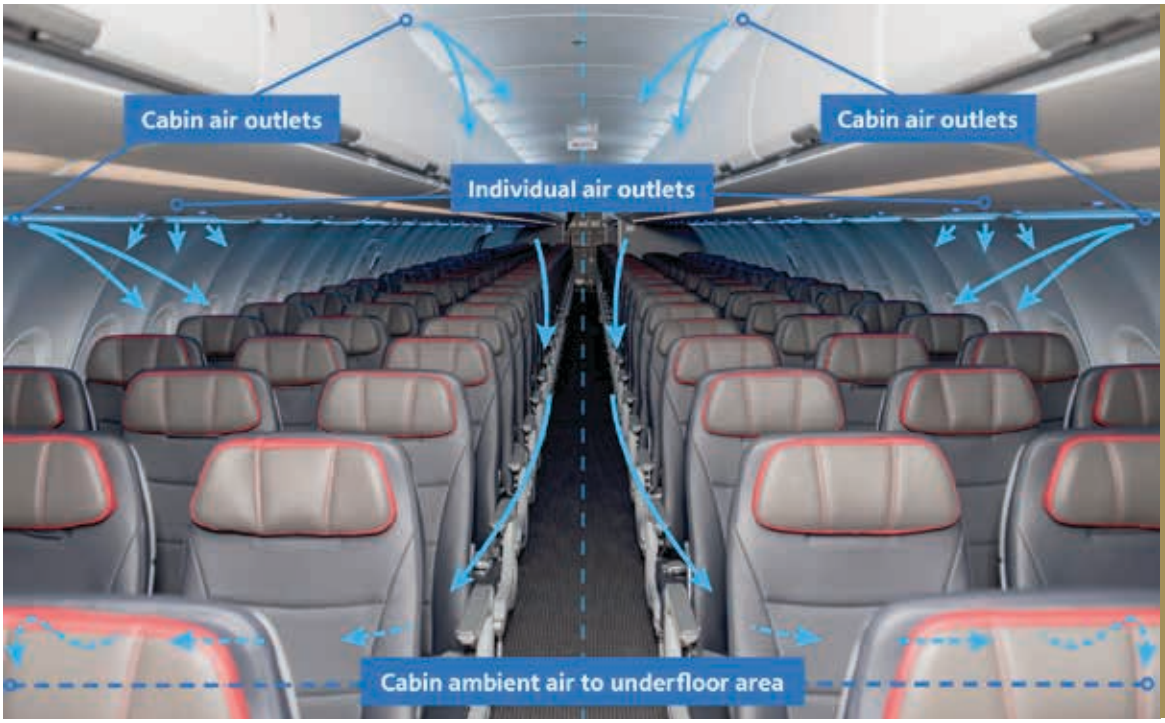
> *"Over the past century we have made astonishing gains in public health by focusing on the basics of clean water, food safety, sanitation, and clean outdoor air. But not as much on clean indoor air. Our experience with the COVID-19 pandemic has demonstrated clean indoor air is a vital part of our pandemic preparedness toolkit and our public health toolkit. Taking steps to have cleaner indoor air, which can be achieved by improving ventilation, will not only improve health and well-being now, but it is also an investment that will benefit future generations and improve people's long-term health. I want to be very clear COVID-19 is transmitted through the air. As the CDC has said since May 2021 on their website and the scientific brief on SARS COV 2 transmission, the main way it spreads is through inhalation of air carrying very fine droplets and aerosol that contain infectious virus. Bringing more clean air into a room reduces airborne disease transmission and reduces COVID-19 transmission. For example, having five air changes per hour can reduce transmission risk by 50% or more. Improving indoor air quality does not have to conflict with our goals of energy efficiency. Combined with whole building tune-ups, tuning us the ventilation and air filtration systems needn't increase energy consumption."*

Building developers and designers must change the way they think about proper ventilation. Clean indoor air must become the goal and not just acceptable indoor air quality.

Think about the statement "indoor air quality does not have to conflict with our goals of energy efficiency". I agree with this statement as long as we stop doing things the way we have done them for years. Building developers and designers must change the way they think about proper ventilation. Clean indoor air must become the goal and not just acceptable indoor air quality.

It's time to learn from the past, demonstrated by the below excerpt from Dr. Zeynep Tufekci (Associate Professor at The University of North Carolina at Chapel Hill and writer at The New York Times) who recently gave a brief history of the importance of good IAQ during an OSTP discussion:

"Historically, we've always struggled to figure out how diseases spread. We didn't have the germ theory of disease until the 19th century. Prior, there was a belief that foul air, which was smelly, was the cause of many diseases, forming the miasma theories of disease. We were onto something because poorly ventilated and smelly places are usually polluted places that are more likely to be inhabited by disadvantaged populations. For the rest of the 20th century, scientists accumulated evidence about aerosol transmission but experienced sociological hurdles and were left without assistance or funding. Fast forward to the pandemic, the droplet dogma immediately got repeated as it was happening. However, emerging evidence showed the virus was traveling long distances, it wasn't transmitting outdoors, and scientists wondered why. Organizations realized something was wrong with the previous logic, and sadly, the evidence wasn't recognized soon enough. By acknowledging the airborne/aerosol nature of viruses such as COVID-19 and influenza, we get an incredible toolkit that allows us to control many venues and is essential for equity. This is an incredible opportunity to do with indoor air what we did to sanitation and water."



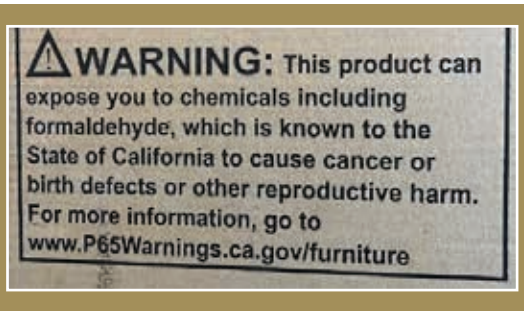
Dr. Linsey Marr, Professor of Civil and Environmental Engineering at Virginia Tech, added:

> *"Aerosols float around just like cigarette smoke, they don't stop at six feet, and they can travel quickly. Even if the air feels still, there's always some movement carrying these tiny particles around. If the indoor setting is poorly ventilated, those will continue to build up over time. We need to reduce the number of aerosol particles, and we have well-established ways of doing that. The first is ventilation. Move more air through, bringing in virus-free outdoor air and pushing out the stale air that contains all the viral aerosols. This will reduce or dilute the amount of virus in the air."*

Think about the above statements: "emerging evidence showed the virus was traveling long distances, it wasn't transmitting outdoors" and "aerosols float around just like smoke." Thinking about being down wind of smoke is a great example of seeing air. The further you are away from the smoker the more diluted the smoke is, however, you can still see it and smell it. In most cases you can't see or smell harmful airborne contaminants, however, we hope that you can now visualize their direction of flow. Considering the virus was traveling long distances indoors, we believe that the energy that created movement was directional air flow. It is time to change the way we think about the dirty off gassing/return air within buildings.

What we bring into a building also effects the indoor environment.

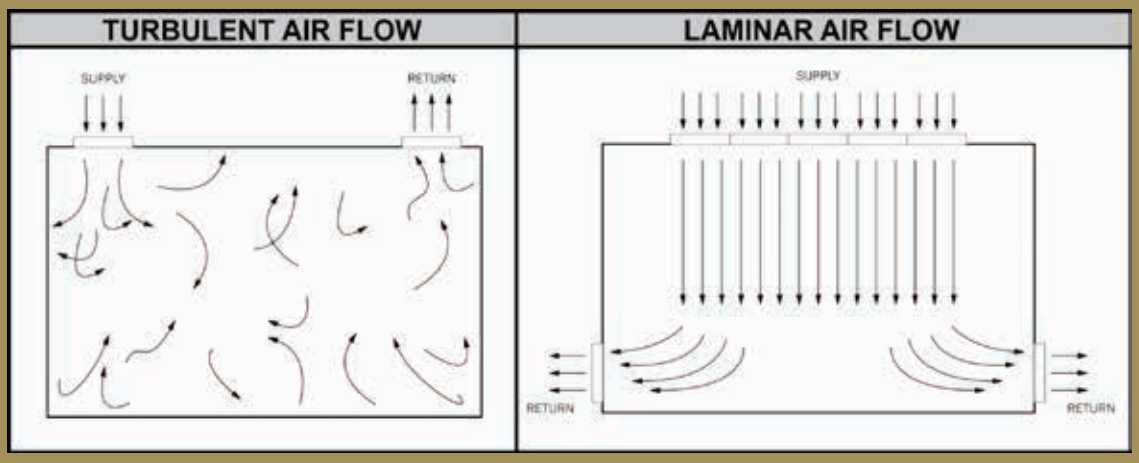
Harmful off gassing is not only due to human occupants within the building. The furniture, carpets, paints, caulking, glues etc. also off gas. We recently received a package with this warning on the box:



What happens to the alveoli (the tiny air sacs in the lungs) over time when breathing what is currently considered "acceptable air?" Remember the definition of acceptable IAQ "Air in which there are no known contaminants at harmful concentrations." How do we know what's in the air if you can't see it? How do we keep the breathing zone ventilated with good clean air?

In the Test, Adjust and Balance profession, we know the answer because we understand directional air flow. For example, many of the buildings that we work in have minimal return grilles. Notice we called them return grilles, why did we not call them "return air distribution?" I grew up in the South as a NASCAR fan. I can remember hearing fans of Dale Earnhardt say, "Dale can see the air." I often think about "seeing the air" when thinking about where it comes from and where it is going. That got me thinking about facilities with cascading pressures between spaces with a focus on the clean (good) air such as cleanrooms and operating rooms. I began thinking about what these facilities have in common that we could implement in our office buildings and classrooms to improve ventilation without increasing the cost of operation. I also thought about the well-documented lack of COVID-19 transmission on commercial airplanes. All three of these indoor spaces focus on four requirements during design: Directional Air Flow, Air Changes, Air Exchanges, and Filtration.

This, I believe, is the answer to the big question "How do we improve the ventilation within the breathing zone without increasing energy cost?" **INTENTIONAL DIRECTIONAL AIRFLOW.** For years we have been discussing outdoor air volume requirements per square foot or outdoor air per person. We have not adequately addressed the direction of air in a space after it has



been exhaled. Consider any indoor space and ask the question, "where is the return grille and how many are installed?" In most cases, there is one return grill located in the ceiling, near the thermostat. This is a great location for the thermostat to sense the average temperature of the return air. But what about occupants that are inhaling the off gassing of others in the space? The occupants closest to the return air grille will inhale a higher concentration of airborne particles.

Thus, if we begin to focus on the direction of return air by installing and balancing ceiling supplies with low sidewall returns, we can reduce the outside air volume, thereby reducing energy costs, while still increasing ventilation effectiveness by reducing cross contamination of the breathing zone common with ceiling returns.

There is minimal upfront cost to low sidewall returns in a classroom or office, however, there are many benefits. Return air distribution is important and we must begin think about the direction of the return air. The question that I hear most often is "How do we pay for it?" One way is per ASHRAE standard 62.1-2019 table 6-4 Zone Air Distribution Effectiveness, which shows a decrease in ventilation effectiveness of 0.8 if your air distribution configuration has a "Ceiling supply of warm air 15 degrees F or more above space temperature and ceiling return". However, a configuration of "Ceiling supply of warm air and floor return" has a ventilation effectiveness rate of 1.0. Per this standard and these conditions, a low sidewall return distribution system would require 20% less outside air. By having low sidewall returns, the ventilation air will travel once through the breathing zone and not be short cycled through the ceiling return grille.

How are we going to pay for it? The United States government has made money available per Dr. Alondra Nelson:

> *"Last year the American rescue plan made available hundreds of billions of dollars for schools, universities, state and local governments, nonprofits, nursing homes, offices and businesses like restaurants and gyms that can be used to improve indoor air quality. For example, $122 billion were made available through the elementary and secondary school emergency relief fund to help schools prevent the spread of COVID-19, including through ventilation improvements."*

In the end, there is more to consider than just initial cost when building a building. The question to ask is: What is the purpose of a building in the first place? We build buildings to provide safe shelter and comfort.

Dr. Joseph Allen (Associate Professor at Harvard T.H. Chan School of Public Health) recently said:

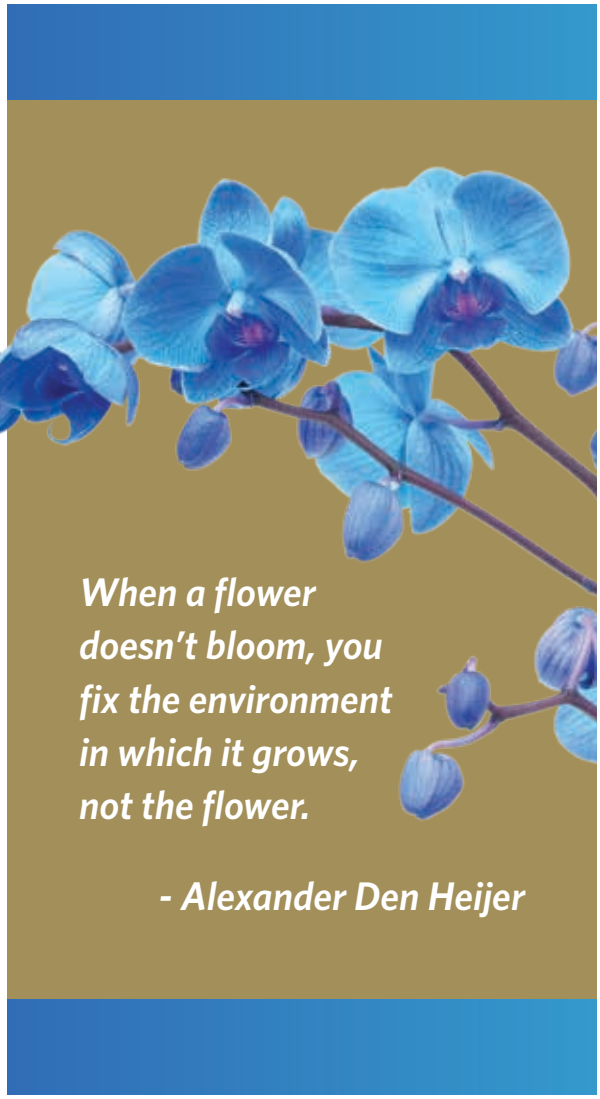
> *"Many studies have shown higher ventilation rates, higher filtration associated with better reading scores, better math scores for students, and decreases in school absenteeism. The benefits don't just stop with schools; we see this in offices and workers everywhere. Higher ventilation rates are associated with fewer missed workdays, better cognitive functions, thinking more clearly, less fatigue, and fewer headaches."*

Dr. Joseph Allen's research on the benefits of ventilation and cognitive function shows that at the cost of $40 per person per year, we see benefits to the business on the order of $6,000-$7,000 per person per year. Massachusetts Institute of Technology (M.I.T.) did a study showing that buildings that are designed and operate to a healthy building standard command effective rents 4%-8% higher per square foot. Healthy buildings are just good business decisions.

Dr. Allen further added, "We're an indoor species; we spend 90% of our time indoors. It's intuitive and logical then that the indoor environment has an outsized impact on our health, and we've been ignoring it for too long."

"We're an indoor species; we spend 90% of our time indoors. It's intuitive and logical then that the indoor environment has an outsized impact on our health, and we've been ignoring it for too long."

It's time to rethink why and how we define and design comfort for indoor environments. ASHRAE standard 170-2021 Ventilation of Health Care Facilities Table 7-1 is clear about air changes, air exchanges (outdoor ACH) and filtration, however ASHRAE standard 62.1-2019 Ventilation for Acceptable Indoor Air Quality does not address ACH or AXH and instead uses a standard of CFM per person. Why is the thought process different for healthcare facilities than it is for commercial buildings? It is time to focus on understanding, designing, and operating unidirectional downward return air distribution systems. Return air being distributed from a space is vital to preventing contaminated air from re-entering the breathing zone. It's important to capture the air as close to the source as possible without returning it across the breathing zone. We understand the importance of this concept in cleanrooms, operating rooms, and airplanes. The benefit of adopting similar standards for commercial spaces will far outweigh the cost. ●



The High Cost of Cybercrime

By Kerri Souilliard

While cybercrime used to be a somewhat elusive practice, ransomware attacks have steadily been on the rise since 2018. In fact, the total number of cyber-attacks from all of 2020 was replicated by the mere third quarter of 2021. This year, it's been estimated that approximately 90 percent of all businesses will be impacted, in some form or fashion, by ransomware. Even companies lucky enough to evade a direct attack are likely to be affected through a business partner, vendor, or other contact suffering cybercrime directly.

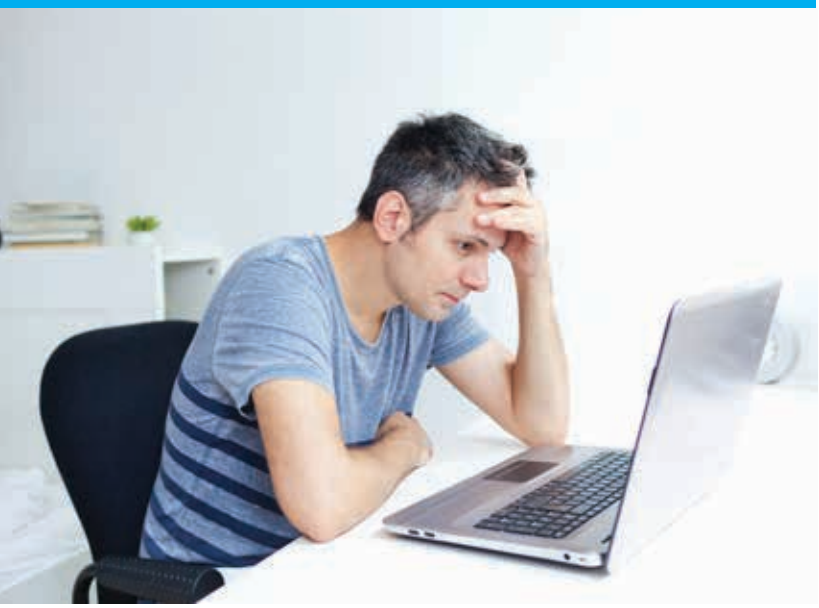
Cybercrime activity totaled more than all other illegal activity combined last year. With the growing trend of financial gain for cyber criminals, it's easy to see why. It's easy, profitable, and hard to get caught. In 2018 alone, cybercrime profits totaled $1.5 trillion dollars.

"An individual cybercriminal can make upwards of half a million dollars in a year simply by trafficking stolen data," states Derek Hedrick, Chief Technology Officer/ President of Ameritech Computer Consultants, Inc. Considering 90 percent of cybercrime occurs outside the U.S., that can be a life-altering sum for many.

Sadly, a good portion of cybercrime stems from people in adverse situations. "There are people making a $3,000 cell phone for $2.50 per week. Consider the enticement of being able to create a piece of code that can take in information, steal data, and demand ransom be paid," continues Hedrick. "Some of these people are just trying to survive."

> "In 2018 alone, cybercrime profits totaled $1.5 trillion dollars."

The Center for Strategic and International Studies, in partnership with McAfee, concluded in a global report that close to $600 billion—nearly one percent of global GDP, is lost to cybercrime annually.



Cybercrime, as defined by the United States Council of Economic Advisors, is an activity, other than one authorized by or in accordance with U.S. law, that seeks to compromise or impair the confidentiality, integrity, or availability of computers, information or communications systems, networks, physical or virtual infrastructure controlled by computers or information systems, or the information resident thereon.

Hedrick goes a step further, explaining, "Cybercrime is when cybercriminals launch cyberattacks on your business as an entity or you as an individual. Cyberattacks are typically launched to steal money, gain access to financial and sensitive data, weaken integrity or disrupt the operations of a company or an individual. Attacks often result in crimes such as financial fraud, as well as information or identity theft."

Cybercrime has increased to the point that malicious hackers attack computers and/or networks once every 39 seconds. Roughly 900 phishing attempts per financial institution and 9,000 attempts per technology company are detected each day. Microsoft cloud services are seeing nearly 300 million fraudulent sign-in attempts daily.

"One of the reasons hackers are so successful is that we're busy. If I get an email that Amazon has made a delivery, which I get every day, it's not out of the ordinary. So, when I get one that says I got a $4000 package, when I didn't order a $4000 package, I'm going to click on it," describes Hedrick. "However, hackers can create a copy of the website and everything, so that when clicked, it redirects to a fake site. Chances are, you will log in because it looks familiar. Now, they have your username and password, and if they're actively monitoring, can immediately log in to do some redirect of transactions or whatever. It's instantaneous."

"I tell people in my seminars all the time, 'Never ever click on a link in an email. Don't do it!' That is the number one way cybercriminals can get into your company—by you inviting them in or clicking on a link. If you take a few minutes more to physically type the website into your browser and log in to view your transactions, you don't run the risk of having an intrusion into your business or personal accounts."

> **"One of the reasons hackers are so successful is that we're busy."**

Phishing sites are now mimicking major technology players like Amazon, Google, Apple, Facebook, and Yahoo. Lookalike UPS notifications are another common fraud. And insidious phishing sites, like those imitating Dropbox, can even dupe users into uploading files for cybercriminals to access.

Overall, email is the most common method for cybercrime, with social media not far behind. The Valimail Spring 2019 Email Fraud Landscape report indicated a total of over 3.4 billion fake emails sent each day. With around 30 percent of all phishing emails in the U.S. opened daily, it's costing organizations millions each year. Unfortunately, it doesn't stop there.

"Be aware that cybercrime is not restricted to the desktop alone; mobile devices have proliferated in recent

years, and with them viruses, malware, and phishing scams," expresses Hedrick. "Because of its open marketplace, the Android platform is home to a variety of malware. In a recent survey, 72 percent of all apps for the operating system were regarded as suspicious, unwanted, or malicious, with trojans making up the majority of threats. Now connect that phone to your computer and guess what happens?"

The most likely cybersecurity threats your business will be exposed to include cyber fraud like phishing; malware attacks such as viruses, worms, trojans, spyware, and rootkits; ransomware attacks; drive-by downloads; hacking; key logging; password decryption; out-of-date, unpatched software, and more.

"A successful cyberattack can cause major damage to your business. It can affect your bottom line, as well as your business' standing and consumer trust," state Hedrick.

The impact of a security breach is not just financial, but also reputational and legal, too. For example, in May 2017, Target paid a $18.7 million settlement over a large-scale data breach that took place in 2013. The company reported that the total cost of the breach exceeded $202 million.

Large corporations can pay a hefty price, but chances are they have the resources to survive long-term. In 2018, each cyberattack was estimated to cost the targeted corporation between $100,000 to $1,000,000 to recover. But for small to medium-sized businesses, the damage caused from a cyberattack can prove fatal: 60 percent of businesses fold within six months the attack.

At the end of the day, we are all targets for cybercrime. "With more and more TAB firms going to a digital environment, it's not a matter of if someone will become a victim of cybercrime but a matter of when," conveys Hedrick. "That is why we are trying to educate our TAB firms on this topic."

"Get backups in place—machine backups, system backups, cloud backups. Get cyber intrusion detection. Those things are going to be paramount to your company's recovery in the case of an event. I would also highly recommend a cybersecurity insurance umbrella. The cost has been skyrocketing, so the sooner that plan is secured, the better. The price is just going up."

"The cost of a single intrusion is going to be in hundreds of thousands of dollars for most people. One company I know bought a cybersecurity rider early on, paying $20,000 total. A few years later, an event occurred which would have cost them $350,000 without it. Also, keep in mind a lot of insurance companies are rejecting claims if the company does not have end point detection (EDP) protocols in place. It's the company's responsibility to take the proper precautions. An EDP like one we use can detect a ransomware attack on a computer and drop it off the network, immediately isolating the network connection to protect the system." ●

For anyone looking to learn more, go to www.ameritechds.com or contact Derek Hedrick at Ameritech Data Solutions directly.

Discover the Charm of CHARLESTON

Where the land meets the sea, a crescent moon hangs in the indigo sky just above a palmetto tree.

By Kerri Souilliard

This well-known image featured on the South Carolina state flag pays homage to an important scene in history: the victory of the Continental Army at the Battle of Sullivan's Island during the Revolutionary War. Despite an unfinished fort and a shortage of gunpowder, South Carolinian soldiers successfully protected Charleston Harbor and prevented the British from occupying Charleston, as well as the rest of the South, in 1776.

Early history aside, so much more has put Charleston on the map in recent centuries. Truly the epitome of Southern charm and coastal living, Charleston is a hotspot of historic attractions, culinary delights, and seaside adventures. Whether you're a history buff, urban explorer, brunching beauty, sun seeker, or sailing enthusiast, Charleston is ready to wow and welcome you with open arms.

"Charleston is what I think of when you hear the term 'Southern Hospitality.' The city is so neat—and has so much history. And the food? YUM! You can't swing a stick without hitting a great restaurant there," states 2021-2022 NEBB President Jon Sheppard who honeymooned in Charleston with his wife, Candi, in 1995. "We loved it so much we went back in '96 and have been back several times since. Now, I'm looking forward to experiencing the city again with my NEBB peers."

This year, all of NEBB is invited to explore the many charms of the city of Charleston, too. The 2022 NEBB Annual Conference will be held at The Charleston Place Hotel in Charleston from November 3-5.

Over Three Centuries in the Making

In honor of King Charles II of England, Charleston was initially founded as Charles Town in 1670. A sort of rebirth after the American Revolution, the city was officially incorporated as Charleston—also known as Chuck Town—in 1783. Further nicknamed "The Holy City" for the array of different religions practiced by its initial settlers, Charleston's unique skyline is defined by over 400 church steeples.

Since its founding, Charleston's economy grew through key exports such as rice, indigo, lumber, tobacco, and cotton. It also became a major naval base when the United States entered World War II. With a strong naval presence and essential shipyards, the city's growth continued throughout the 20th century.

As emerging industries like life sciences, energy, aerospace, IT, and defense took hold, expanded employment opportunities increased the population even more. According to a 2021 U.S. News and World Report survey, Charleston is one of the top twenty fastest-growing cities in the country.

By merging many cultural backgrounds, Charleston has become known for a variety of arts and entertainment, boating, and leisure activities, as well as customs and traditions. The Charleston vibe is a distinct blend of coastal Southern American living combined with influences of the Gullah culture—chock-full of unique arts, music, food, language, and spirituality—descended from slaves. Today, tourists and residents alike enjoy highlights of the rich culture Charleston cemented in history decades, and even centuries, before.

Visitors, Welcome!

Last year, Charleston was named Travel & Leisure's top city destination across the United States. As a key tourism destination, Charleston attracts everyone from young couples to growing families to vibrant retirees. Visitors flock to Charleston from all walks of life for good reason: everything feels a little lighter when experienced under the sunny skies of this vivacious port.

Enter a nautical world of white-washed shiplap against cool neutrals, fresh florals, and pops of palms. Stroll along the seaside, taking in views of the water from every direction. It's the simple moments here. Stop to enjoy the warm, salty breeze and sights of glassy seas, and feel the serenity wash over you like a wave. Add in a little adventure, culinary exploration, or local style and flair, and this picturesque community will quickly capture your heart.

Downtown Doings: Sights to Be Seen

Whatever you do, don't forget to bring your walking shoes! You can get just about anywhere on foot—or by sail—around Charleston. When your feet tire, take a tour by bus, carriage, Segway, or trolley. Charleston is the perfect backdrop for just about any kind of tour—history, churches, distilleries, ghost tours, you name it!

Downtown, you will find many of the picture-perfect landmarks and monuments popular on postcards. Start your trip with a proper welcome at the infamous Pineapple Fountain at Waterfront Park in the French Quarter. Totaling twelve acres along the Cooper River, Waterfront Park looks out to Charleston Harbor.

Down on the Waterfront Park Pier, benches hanging under the breezeway invite visitors to swing seaside. At the end of the pier, sweeping panoramic views of the water confirm the vast possibilities for excitement. Dotted with everything from boats to watersport enthusiasts, and water taxis to sunset cruises, the river meets the horizon with a clear view of the Arthur Ravenel Jr. Bridge.

Soaring above the coastline, the cables of the Ravenel Bridge form two unmistakable diamond silhouettes. Connecting Mount Pleasant to Downtown Charleston, the iconic bridge spans 2.5 miles long. In fact, this popular landmark hosts the annual Cooper River Bridge Run that shuts down traffic for part of a very popular day.

Stroll a little further south and snap a picture of Rainbow Row, the beautiful array of candy-colored homes along the Battery. With architectural styles ranging from Georgian and Federal to Greek Revival and Italian Renaissance, the Battery is a likely place to fall for the architectural allure of Charleston.

Continue along the enchanting cobblestone streets as history intersects with handmade crafts and wares within a variety of remarkably preserved storefronts and beautiful boutiques. From upscale sportswear and feathered Brackish bowties to coastal chic accessories and palmetto printed shirts, Charleston makes it easy to shop Southern style. Plus, locally sourced souvenirs like Carolina sea salts, teas, and spices, handcrafted candles and soap, or rice bead bracelets can make the perfect keepsakes for taking a small piece of Charleston back home.

While Southern style and trendy treasures are sprinkled throughout the city, the Charleston City Market offers a central location to peruse the offerings of over 300 vendors. Spanning four city blocks, the market was established in the 1790s. Once known as a gathering place for farms to bring beef and produce, Charleston City Market is now a destination for everything from souvenirs and sweetgrass baskets to prepared food to art, antiques, and jewelry.

Of course, no journey through Charleston's past would be complete without acknowledging the role the city played in the domestic history of the slave trade. Added to the National Register of Historic Places in 1973, the Old Slave Mart Museum (the only known slave auction site in South Carolina) tells the harrowing story of Charleston's slave trade in the mid-1800s.

Historians seeking more may want to mosey through the historic College of Charleston's campus, founded in 1770. Or experience Charleston's past by stopping by the Powder Magazine, the oldest public building in the state. Used from 1713 through 1748, this arsenal helped protect the colony against attacks from the Spanish, French, pirates, and more.

Across the river, the USS Yorktown rests at Patriots Point Maritime Museum in Mount Pleasant. The legendary U.S. Navy aircraft carrier was pivotal in both World War II and Vietnam, as well as the recovery of Apollo 8.

Another cornerstone of Charleston's military history is the Citadel. One of six senior military colleges in the United States, the Citadel has been providing a reputable education to the South Carolina Corps of Cadets since 1842.

September through November, the NCAA Division I Citadel Bulldogs attract thousands of local fans to highly anticipated football games. In other seasons, like spring and summer, sports fans can watch Charleston Battery Soccer at Patriots Point Soccer or attend a Charleston RiverDogs Baseball game at Joseph P. Riley, Jr. Park.

Outside the City: Lowcountry Living

Visitors ready to venture beyond the city streets can summon an array of relaxed or ritzy experiences, depending on their desires. Tours of popular plantations, distilleries, and parks are available right outside the city.

Established in 1676, the popular Magnolia Plantation and Gardens sits along the Ashley River. Home to Drayton Hall, the oldest plantation house around Charleston, as well as the oldest public gardens in America, the plantation is recognized on the National Register of Historic Places. Choose from a variety of tours highlighting the various parts of this expansive property.

In North Charleston, Firefly Distillery lights up the night—and day, for that matter. Bustling with daily tastings, tours, and events, Firefly offers a distinguished line of Southern inspired liquors. Nearby, another top name in spirits is the Striped Pig Distillery, Charleston's first distillery since Prohibition.

Southwest from Charleston, the majestic atmosphere of Angel Oak Park awaits. Located on Johns Island, this Lowcountry treasure is considered the largest live oak tree east of the Mississippi. Estimated to be nearly four centuries old, its endless, curving branches seem to sweep up towards the sky and back down to the ground in one fluid motion.

Head out further to Wadmalaw Island to unearth two rural gems of the Lowcountry. Take a tour of the Charleston Tea Plantation, home to the only American-grown tea in the world. Or discover a hotspot of all things rustic at Deep Water Vineyard, the lone vineyard in the state. Grape stomping and candle making, anyone?

Finally, it's time to kick back at the beach. An easy 20-minute drive from Charleston and you can soak up the sun at Folly Beach. Drive ten minutes more and an indulgent day spent on the pristine shores of Isle of Palms or Sullivan's Island is yours.

For relaxed luxury balanced by the beauty of nature, Kiawah Island is the place to be. From consistent top rankings as a local beach to loggerhead sea turtles nesting in the sand, Kiawah is home to ten amazing miles of shoreline.

Golf fanatics would be keen to check out Kiawah Island, too. Home to five championship courses, the Kiawah Island Golf Resort is known worldwide. Just last year, the Ocean Course at Kiawah hosted the 103rd PGA Championship. Meanwhile, NEBB golfers will have to chance to golf one of these beautiful courses this year.

Southern Delights

Get a taste of good ol' Southern cooking! Boasting classics from shrimp and grits to sweet tea, Charleston is known for its flavorful local fare. Keep it casual with Lowcountry cooking or get glammed up and go gourmet at one of Charleston's high-end eateries.

First things first, the local weather is a dream for al fresco dining. As long as you can avoid the summertime heat, a meal on the patio is the way to go.

Breweries like Edmund's Oast offer a quaint courtyard with plenty of outdoor seating, as well as appetizing options in both the kitchen and the taproom. From fried chicken, po'boys, and charcuterie boards to imperial stouts and impressive IPAs, culinary and craft brew cravings lead the way.

For fried delights and traditional Southern dishes, try Husk. Relying on regional ingredients, the menu changes frequently to reflect whatever is freshly available. Sample staples like pimento cheese and benne crackers, cornmeal fried catfish, biscuits and gravy, or smoked pork ribs.

Akin to a backyard boil, Bowens Island Restaurant is the place to try Frogmore stew. Despite its namesake, this Lowcountry delicacy is made up of ingredients like shrimp, corn on the cob, new potatoes, and smoked sausage.

The brunch crowd would do well to check out Millers All Day for 24-hour breakfast options or the Barbados Room for its bottomless mimosas. For a more refined local mainstay, SNOB, or Slightly North of Broad Restaurant serves up shrimp and grits and fried softshell crab.

Considering its prime seaside location, seafood is one the most highly regarded components of Charleston cuisine. From fresh oysters and she-crab soup, the possibilities of a fresh Carolinian catch are endless. Skip the crowd at Hyman's and head over to Chubby Fish where an assortment of sustainably sourced seafood excites the palate in a relaxed atmosphere. Pleasing contemporary combinations are offered from the raw bar to the table, including everything from crudo and ceviche to fried oyster rolls or snapper plated whole.

Regarding oysters, NEBB conference goers are in luck! November is prime oyster season in South Carolina. There's no better time to snack on some shellfish at places like 167 Raw or Pearlz Oyster Bar. After all, feasting on an assortment of fresh, locally harvested mollusks is elemental to the Charleston experience.

Also, at the modern core of Charleston cuisine, Halls Chophouse features American fine dining centered around prime steaks and first-rate service. With a history of hospitality, this distinguished steakhouse offers some of the finest cuts of beef in Charleston, not to mention a copious wine list and family-style sides.

From high class to casual charm, Charleston is much more than sweet tea and seersucker. Get ready to become entranced by Charleston, y'all! ●

SAVE THE DATE!

2022 NEBB Annual Conference

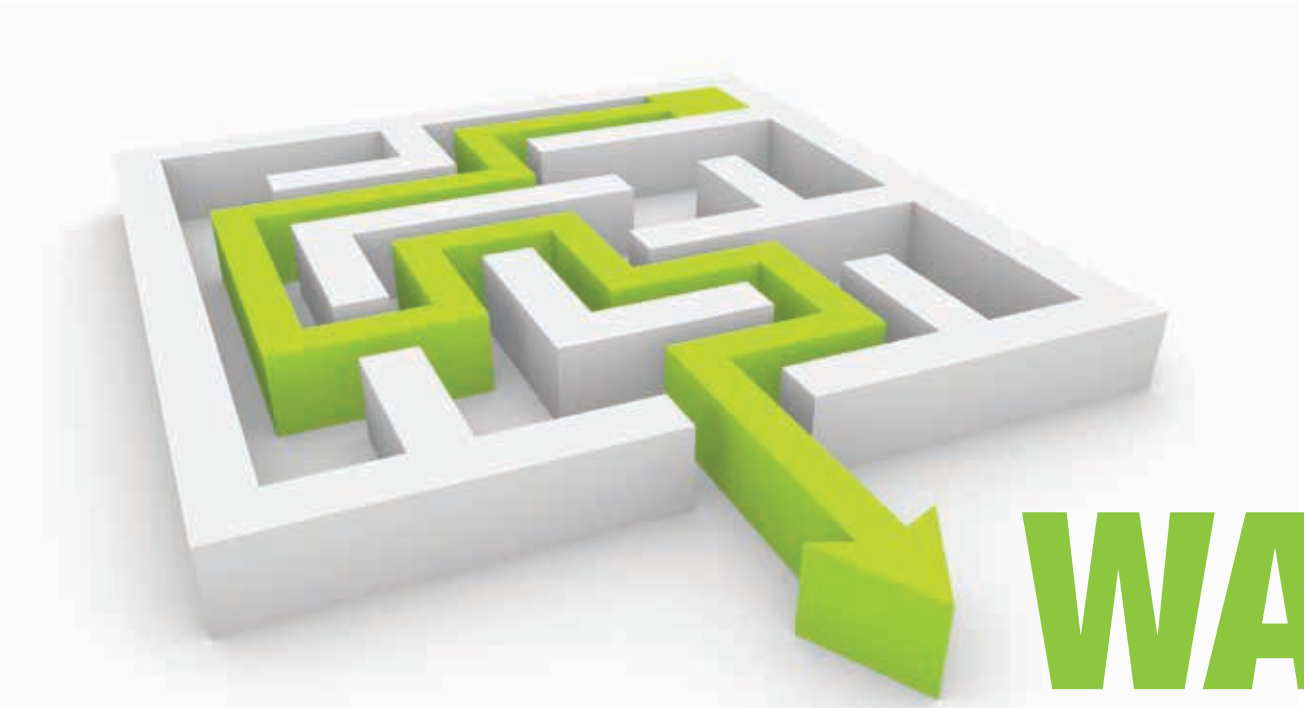
Charleston, SC: Adapting NEBB for the Next Generation!

November 3-5, 2022 • The Charleston Place Hotel

2022 NEBB
ANNUAL CONFERENCE
Charleston, South Carolina
November 3-5, 2022
NEBB

NEBB is preparing and planning for the future of our industry. We are poised to launch a robust online experience in 2022 that will put training into the hands of the technicians and professionals, right where they are! We are adjusting and adapting our materials and delivery methods for tomorrow's generation of NEBB Professionals.

Check the NEBB website for event and registration information as well as conference activities that includes golfing and fishing excursions.



WAR STORIES

By William C. Bailey

This *War Story* begins in Nashville, TN where Nashville Machine Company was contacted by a local commissioning group to help with ongoing facility issues. The facility was a government office that utilized a local management group for facility maintenance.

Periodically, I would reach out to this customer to get details on problems they were facing. They stated that the two chillers were insufficient for the facility, and the building facility group would have to set the chiller limits to 65 percent. This was done to prevent the centrifugal chillers from going into a surge due to water inlet and outlet temperatures getting way too warm.

With the chillers limited, the facility could not maintain comfortable space temperature and humidity values for the occupants that were working throughout the building. The entering and exiting evaporator water temperatures could not hold discharge air temperature for the AHUs or humidity levels for the facility.

The facility consisted of two Trane centrifugal chillers that were water cooled. Systems were constant volume with GPM flow through to both the condenser water and evaporator.

We reached out to the management group, as requested, to see if we could visit the site and walk the mechanical room and remote cooling towers. Walking the site would allow us to get an idea of labor cost to trouble-shoot the system to determine why the chillers struggled to perform.

The chillers were struggling to perform

In talking with the Lead Facility Manager and Engineer, we were told the chillers were doing all they could do as far as performance and the problem was with the main building load. He stated that the facility had added additional load and the chillers could not keep up, thus causing the surge. For this reason, he had manually set the chillers limits. The Lead Facility Engineer seemed displeased with the idea of us coming into

his facility to do an evaluation and testing of the systems. Assuring that we would inform him and take his concerns into consideration while doing the review, I asked when the last time the condenser side of the system had been brushed/rodded for cleaning of scale. They stated this had gotten serviced earlier that year and they were indeed clean.

As we walked the site, I started to review items that would cause the surge issues. I first started to review pumps and valves for the chillers on the condenser water side of the system. I continued to ask the Facility Engineer questions as we walked through. This gentleman had been with the facility for several years and seemed to have an understanding and history of what had taken place over the years.

I observed that the triple-duty valves were 100 percent open for all four pumps—two condenser and two evaporator. One pump would be capable of delivering total flow for both condenser barrels of the chillers, while the evaporator had a dedicated pump to a single chiller on a common header. The condenser had a redundant pump for standby when we reviewed the mechanical drawings and pump nameplates. My biggest concern, at this point, was why the triple-duty valves were 100 percent open.

As we went outside to the cooling towers, we saw the installation consisted of two large cooling towers with open loops, hot basins, and cold basin sump to return water to the chillers. The fill on the towers looked to be in fair shape and cold-water basins looked to be clean with no large build-up of scale.

When talking with the Facility Engineer, we observed that all the hot basin distribution valves were throttled down to nearly 25 percent open for all hot basin distribution pans. The Facility Engineer's reasoning was that, if opened, the water would overflow the hot basins and that these could not be moved from their current locations. I suspected this was limiting our condenser GPM flow due to the valves obstructing the overall flow and raising the head to the pumps.

Next, I reached out to the Facility Manager to generate a quote to go through the system and review actual GPM flow for both the condenser and evaporator side of the systems. The Facility Engineer was less than pleased to hear we would be verifying everything, including that which had been running without issue other than additional load—possibly where the problem lied. We explained that this may be the case, but we needed to perform the tests to make sure everything met the original engineer's design intent first before changing out chillers, pumps, and towers.

With approval to move forward, we planned for testing and adjustments early in the morning when we could shut down chillers and pumps to test the individual systems. The approach was to shut down all systems and get all hot basin distribution valves 100 percent open. Once this was achieved, we elected to place differential meters across the condenser barrels—first

with chillers in an off state. I elected to close down the triple-duty valve to 25 percent open so as to not overflow the hot basins on the initial start. I had a technician on the towers to monitor and adjust the hot basin distribution valves as needed, but have at least one (if not two) of the valves 100 percent open to minimize head back to the pump. I also placed an amp clamp on the motor starter to monitor amperage as I gradually opened the valve. With the pump up and going, I monitored the differential across each chiller. I also placed an ultrasonic meter on the condenser water piping to see how we compared to the overall GPM flow for both chillers since these were piped in parallel. As I opened the triple-duty valve, I saw the differential for both chillers at the designed differential pressure. The pump amperage was well within the required values and things were going well inside.

We want to maintain the professional aspect of what we as NEBB Certified Professionals do for our local areas and regions.

I then went out to see how things were going with the towers. We had to slightly close down two of the four valves to measure each hot basin distribution to accommodate the proper height of elevation. Once the first pump was set correctly, I shut it down and started the same process for the redundant pump. Both pumps were right at designed requirements for condenser water with triple-duty valves around 85 percent open. With this completed, operations continued for a period while we started on the evaporator side of the system. We started a single evaporator pump which was dedicated to a single chiller. We reviewed the differential on evaporators of both chillers with AHU valves forced 100 percent open for the facility due to chillers being down. With the chillers shut down, no cold water was being sent to equipment and the discharge air temperatures were not being maintained, forcing the chilled water valves open. Confirming systems were per design, we adjusted the triple-duty valves to accommodate proper GPM flows. With both evaporator pumps operating in parallel to the equipment and AHUs, we could see that the systems were meeting designed requirements for GPM flow and head. Both pumps were well within nameplate amperage, and all seemed to be functioning well within the requirements.

After adjusting the evaporators' triple-duty valves to proper values by monitoring differential pressures of the individual barrels, we returned to review the condenser water hot basin distribution levels to confirm they were still even for the four areas. At this point, we placed both chillers back online. With the building warm from chillers being shut down, we started both chillers to see the system's performance. We released the chiller limits to allow these to go back to 100 percent load. Both chillers would work fine with no issues with surge or water temperature or refrigerant pressure issues. Tower fans were maintaining the 85-degree set point as requested. The chillers started to back down and modulate to maintain the 45-degree set-point. Once both chillers were less than 30 percent load, we staged back to a single chiller and the building was performing well. Both condenser and evaporator pumps were still well within nameplate ratings and performing as required by the design documents.

All in all, the whole issue was the hot basin distribution valves being throttled down too far, causing insufficient condenser flow to the chillers. While the Lead Facility Engineer was not on site while we performed testing, the facility management group sent a regional facility maintenance professional to assist, which turned out to be a great thing. In doing the testing and final checks we found that the chillers were adequately sized and there was no real issue with the systems being insufficient.

As stated in previous NEBB articles, we want to maintain the professional aspect of what we as NEBB Certified Professionals do for our local areas as well as regions. We did so by gaining a great new relationship with the regional facility maintenance group and shedding light on what was taking place within the facility. In conclusion, the group was not only satisfied, but also grateful, that the organization and building owners were spared modification with upgrades at this time.

The TOOLBOX

By Jeff Schools,
NEBB Technical Director

Instrument Changes for the 2023 Recertification Cycle

Every year before recertification starts, we query the Technical Committees to find out if there are any changes that need to be made to the current discipline Required Instrumentation lists that are on the NEBB website. I am happy to announce that this year there are only a few minor changes that are being made to the Sound and Vibration lists and everything else will remain the same from 2022. The changes do not impact any NEBB Firms' current instruments, they are more for accuracy.

Sound Instruments

Under Full Octave Filter, new table numbers were added to match up with the Tables in Appendix A. Also, "Old" Table 3-1.2.3 Octave Band Filter Roll Off Response is being replaced with, "New" Table 3-1.2.3 Type 2 Octave Band Frequency Response. The updated tolerances are now in compliance with ANSI/ASA requirements.

Vibration Instruments

The current Accelerator/Transducer, Sensitivity of (+/- 10%) is changing to (+/- 20%), and the current Accelerator/Transducer, Frequency Range = 2 to 3000 Hz at +/- 5% is changing to Frequency Range = 2 to 3000 Hz at +/- 3dB. With this, we effectively loosened the tolerances on precision. The updated tolerances are more in-line with typical commercially available accelerometers.

These changes will be found on the (Effective January 1, 2023) Instrument List when it's placed on the NEBB website before the next recertification cycle begins.

Robert Gawne Training Center Update

In the past few weeks, there have been some exciting things going on with the progress of the Training Center. We were finally able to get a big enough crew together to move the 2 Fume Hoods into their permanent positions. At this time, they are set, and wired for the lighting. We are waiting for the delivery of the fans and control valve to complete the ductwork.

We were also able to complete all of the work that needed to be done on the BET Lab before the April 25-27, 2022 Seminar and it was a huge success.

Chapter NEWS

MAEBA Chapter

Trish Casey, Chapter Coordinator

MAEBA held their Semi-Annual Meeting on April 22, 2022, at the Radisson Hotel in Trevose, Pennsylvania. A special thank you to our speakers, John Boyle of R. D. Bitzer Co., Inc. and Mike Kelly of Air Filtration Management, Inc. for providing their presentations.

MAEBA will be holding their Annual Recertification Seminar September 18-19, 2022, at the Hard Rock Hotel and Casino in Atlantic City, New Jersey.

MAEBA will be celebrating their 50th Anniversary at this seminar. The Recertification Seminar will begin on Sunday evening, September 18th with a dinner reception at the Hard Rock Café.

On Monday, September 19th, following the morning speakers, the attendees will have the oppor-

Hard Rock Hotel and Casino

tunity to visit the Vendors while enjoying their dessert. This is a great opportunity for attendees to meet the vendors and learn about the latest and greatest equipment and software the vendors have to offer. If you have a topic that would be interesting for the MAEBA CP'S and CT's, please contact Trish Casey, MAEBA Chapter Coordinator, to see if there are still time slots available on September 19th.

SCEBB Chapter

The The Southern California Chapter of NEBB (SCEBB) Board of Directors (BOD) has recently established a program to help candidate Certified Technicians (CTs) in their endeavor to pass the CT exam. The program involves a 2-day refresher course (8 hours a day) with a power point presentation that covers the major topics involved in the CT exam.

The concept is not new, Capital Marva Technical Committee Chair and current NEBB President Jon Sheppard has implemented a similar course for CT applicants in Cap Marva several years ago and that program has shown to be successful. Jon was kind enough to share his power point presentation with SCEBB along with several conversations held between Jon and current SCEBB President Erik Dlugajczyk (Equal Air Balance Company).

Erik discussed the program with SCEBB Coordinator Jim Rosier and with the SCEBB BOD. The BOD unanimously decided that this program should be implemented immediately to allow contractors to become compliant with NEBB's policy of having a CT on every job stamped with the NEBB stamp.

The BOD discussed the finances involved with such an undertaking, along with personnel, and the BOD formed an Education Committee (EC). The chair of the EC is David Jones (Inland Air Balance Company) and Dave quickly went to work reviewing the power point, making adjustments to suit a 2-day training period. Additionally, Dave was involved in helping to pick the instructor tasked with teaching the course.

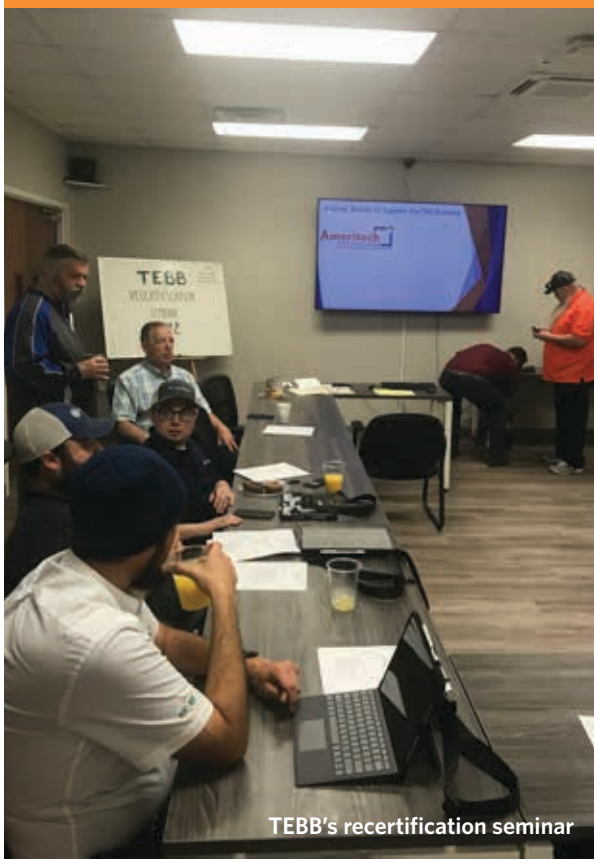
Pat Braham NEBB CP (Equal Air Balance Company) was appointed as the instructor, Pat is a 24-year veteran of the Test and Balance Industry. Pat immediately went to work studying the power point presentation, and figuring out how to teach the entire course in a 2-day span. Dave and Pat worked together to develop the presentation in a manner that would deliver the best results for the students enrolled in this program. Both Pat and Dave felt a great sense of reward when they were told that 1 of the students passed their exam, as a direct result of the dedication to the program. Other candidates have already scheduled their exams and SCEBB is eagerly awaiting those results.

NEBB's policy of having a CT on each NEBB certified job has been in place for many years, it is the opinion of SCEBB that programs like this not only allow technicians to progress in their education, but also help the contractors involved to be compliant with NEBB's Procedural Standards on each job. All of this propels NEBB as the premier international certifying agency for firms and individuals, and sets NEBB apart from all other certifying agencies.

TEBB Chapter

William Bailey, Chapter Coordinator

The TEBB Chapter held their recertification seminar on April 22, 2022. TEBB's speakers for the all-day session were: Derek Hedrick, Ameritech Data Solutions and Ameritech Computer Consultants, Inc., who presented cyber security and TABOpts reporting; and Jon Harvey, CaptiveAir, who presented hands on TAB with CaptiveAir hoods. Discussed were the specifics with how to properly read their systems as the factory testing is done and what instrumentation to use. Also presenting was Brian Keller, NEBB representative, who reviewed the latest and greatest from NEBB with annual certifications taking place as of July 1st.



TEBB's recertification seminar

Mid-South EBB Chapter (MEBB)

Ginger Slaick, Chapter Coordinator

MidSouth EBB is excited to announce that the 2022 Recertification Seminar will be held in conjunction with the NEBB Annual Meeting at The Charleston Place in Charleston, SC. The dates for MidSouth EBB are Saturday, November 5th and Sunday, November 6th. Additional information with specific details regarding registration, hotel accommodations, CECs for CPs, CTs, etc. will be distributed soon. For now, mark your calendar and plan to join us in Charleston, South Carolina!


The Charleston Place

2022 NEBB Technical Seminars Schedule

September 12 - September 14
NEBB TEC, Gaithersburg, MD
Clean Performance Testing Seminar

September 15 - September 18
IMI Training Center, Irvine, TX
Testing Adjusting and Balancing Seminar

September 19 - September 21
NEBB TEC, Gaithersburg, MD
Retro-Commissioning for Existing Buildings Seminar

October 31 - November 1
NEBB's Annual Conference in Charleston, SC
Testing Adjusting and Balancing CT Seminar

Sign up now through your certelligence account.

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Check out NEBB's new Learning Center for online courses geared for:

- Certification Candidates looking to expand their self-study options
- Owners looking to train new hires in the basics
- CPs and CTs looking for CECs

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