Commercial Real Estate and Air Quality Safety: A Win-Win-Win for Facility Managers, Employees, and Tenants

Making solid choices to bring the benefits of air quality safety to your clients and those they serve

Blueair

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The commercial real estate (CRE) environment is in a state of flux these days as organizations are both bringing staff back to physical work settings and considering the critical infrastructure investments needed for a safer workplace setting. One thing that is certain: employees, building occupants, vendors, and others continue to have concerns about health and safety as they return back to the workplace.

Experiences over the last several months have heightened awareness of the importance of air quality—even after COVID-19 concerns have subsided air quality is likely to continue to be a consideration for companies of all kinds.

The truth is that there have always been pollutants in the air around us. We have just become more attuned to the importance of good air quality and the impacts of dust, pollen, smoke, pet dander, viruses, bacteria and microplastics.

Air Quality Matters

Improving air quality is worth the investment for your company. For example, studies have shown that better office air quality can positively affect employee cognition and productivity. You'll see better results from your employees while providing an environment that provides peace of mind for all.

As Harvard's School of Public Health indicates: "The researchers noted that they observed impaired cognitive function at concentrations of PM2.5 and CO2 that are common within indoor environments."

A focus on air quality can make your facility more attractive to employees, tenants, and others while helping to increase productivity and minimize absenteeism.

Air quality technology has improved immeasurably over the past few years, with innovations that can both remove toxins and remain cost-effective solutions for developers. New product features provide significant value in an environment where awareness of air quality has been heightened.

COVID-19 has heightened awareness of the importance of air quality and the role that air purifiers can play in improving air quality. But, while COVID-19 has underscored the importance of indoor air quality, in truth this is an issue that existed long before the pandemic—and will persist long past.

In fact, you may be surprised to learn that in 2019, before the pandemic, a study covered by Harvard Business Review indicated that the most important wellness perk for employees was better air quality![1] "Half of the employees we surveyed said poor air quality makes them sleepier during the day, and more than a third reported up to an hour in lost productivity as a result. In fact, air quality and light were the biggest influencers of employee performance, happiness, and wellbeing, while fitness facilities and technology-based health tools were the most trivial."

That sentiment has certainly been enhanced by the increased attention COVID-19 has drawn to the importance of air quality. This makes the role, and potential impact, of facility management leaders more important than ever.

But many don't know what to look for—or look out for. In addition, people with asthma or other susceptibilities have unique concerns.

Obviously, organizational leaders and facility managers want to ensure that they're making the right choices to provide the most, and the best, protection for employees, customers, and others.

Knowing **What to Look For**

Facility management leaders are concerned with both performance and cost-effectiveness when considering the type of air purifiers that will work best in their corporate settings.

Employees have concerns about their work environments; we've seen that air quality tops the list. And rightfully so. Indoor air can be up to five times more polluted than outdoor air. Organizations have a variety of indoor spaces where people gather—from lobbies to conference rooms, to fitness facilities, auditoriums, cafeterias, and more. Understanding the options available, the key considerations to keep in mind, and the questions to ask when reviewing product solutions are important.

The right air purifier can help improve the air quality and provide peace of mind for staff, customers, and others. But not all air purifiers provide the same level of protection and much of the terminology can be confusing. Here we take a look at important considerations for CRE developers and their facility teams as they make important decisions about ensuring safe indoor environments.

Air **Quality**

Air quality is clearly top of mind when redesigning or retrofitting any commercial facility. Many air purifiers do little more than push dirty air through a filter. You'll want to look for an option that ensures cleaner air by filtering out more harmful particles.

Technology that combines mechanical and electrostatic filtration to capture and remove harmful particles from indoor air can make all the difference.

Blueair's HEPASilent™ and HEPASilent Ultra technologies use a combination of mechanical and electrostatic filtration to capture and remove harmful particles from indoor air; our technology is designed to specifically and strategically electrostatically charge particles at a very low current. This makes the particles adhere to the polypropylene fibers in the filter more easily due to electrostatic forces, which allows the use of a less dense filter, so more air can be pushed through with less noise and less energy.

The lower filter density allowed by the stickiness of the charged particles also reduces clogging. Filtration remains at peak performance levels longer, with high efficiency and longer lasting performance.

Efficiency

Cost and performance are obvious concerns for facilities managers. According to the EPA[2], one of "the most helpful parameters for understanding the effectiveness of portable air cleaners" is to look at Clean Air Delivery Rate (CADR) value. CADR is a measurement of the volume of filtered air an air cleaner delivers with numbers for three commonly sized particulates: dust, pollen, and tobacco. The higher the number on the label, the faster the air cleaner filters the air. CADR is recommended because airborne pollutants can continue to enter a space through windows/doors/HVAC gaps. The speed and frequency of air exchange are important elements to factor into a purifier's efficacy. A general tip is to look for air purifiers that are AHAM Verifide. This means the air purifier has undergone rigorous independent testing and has CADR scores on tobacco smoke, pollen, and dust with a recommended room size based on a 4.8 air exchange (meaning the air purifier can clean the recommended room size every 12.5 minutes or so).

If you only evaluate an air purifier based on its removal rate or filter's filtration efficiency, the claimed performance metric does not account for the air exchange frequency which is an important factor in managing indoor air quality effectively through increased ventilation/air changes.

Recommended Room Size

Recommended room size according to ANSI AHAM AC-1 of Blueair Products – based on five air changes per hour

Classic Series	AHAM Recommended Room Size
200 series	26 m^2/279 sq. ft
400 series	40 m^2/434 sq. ft
500 series	65 m^2/698 sq. ft
600 series	65 m^2/698 sq. ft
Blue Series	
121 [A]	57 m^2/620 sq. ft
211/211+/221 PA/ 221 [A]/221 [B]	50 m^2/540 sq. ft
411 [B]	15 m^2/161 sq. ft
Pro Series	
Pro M series	36 m^2/390 sq. ft
Pro L series	78 m^2/837 sq. ft

Room size is also an important consideration to ensure maximum efficiency.
It is important to choose an air purifier that can accommodate the volume of air in the room where you will place it. This ensures there is enough airflow (measured in air changes per hour or ACH) to reduce pollutant levels consistently and over a long period of time.

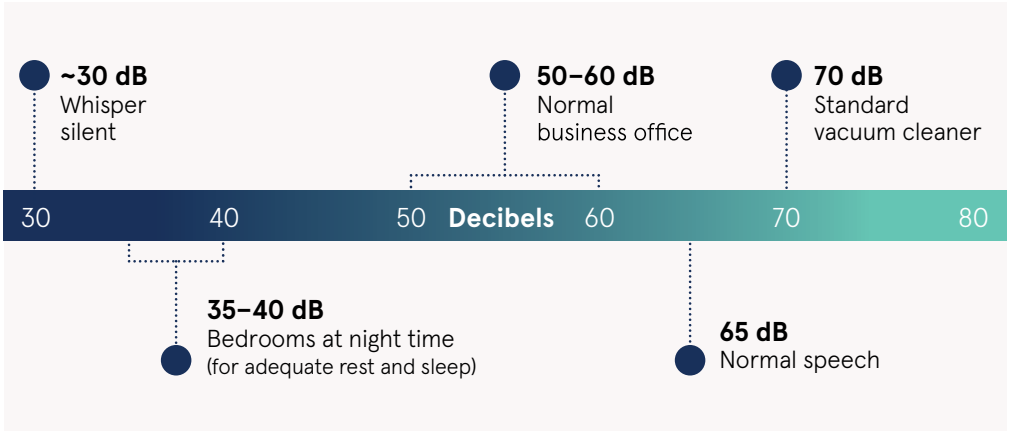
Blueair air purifiers are certified by AHAM for CADR and recommended room size based on filtration of all air in the room at a rate of 4.8 times every hour.

Noise **Reduction**

Employees need quiet settings where they can focus on their work for maximum productivity. The denser the air filters of the air purifiers you use, the harder the air purifier fans will need to work. Less dense filters allow the air purifier fans to run at low speeds, resulting in less noise while still delivering a high flow of clean air.

While the normal business office has sound power levels of 50-60 dB, you may be surprised to find that Blueair's whisper-silent technology operates at ~30 dB for a quiet environment that minimizes distractions.

Sound Power Levels



The above references can be used as guidelines when comparing noise levels.

Some air purifiers can create a lot of noise. Several Blueair purifiers, though, are certified by Quiet Mark, a UK-based, independent accreditation firm that has collaborated with the Noise Abatement Society to explore a "quiet revolution." Blueair Air Purifiers can produce more clean air at low fan speeds which make them whisper quiet while also consuming low amounts of energy.[3]

Energy **Efficiency**

Energy cost considerations and environmental impacts are a concern whenever evaluating new equipment purchases. Air purifiers are no different. Given the number of indoor spaces that most CRE facilities managers need to be concerned with, keeping energy costs down is top-of-mind.

An Energy Star rating indicates that products or devices use less energy, cost less to operate, and protect the environment. Energy Star is a globally recognized program of the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy. The program was developed to help consumers save money and to protect the environment through energy-efficient products. Criteria required for Energy Star qualification for air purifiers include CADR based on AHAM values, CADR/Watt, standby power usage, and ozone emission.

Ozone Emission **Safety**

It's important to ensure that the air purifiers you use are not adding to poor air quality and that they reduce ozone concentrations. Some air purifiers have been linked to creating additional ozone in indoor spaces and increasing ozone concentration in the air. There are various types of air cleaning methodologies including particle removal, gas pollutants removal, and pollutant destruction. Air purifiers that use ultraviolet germicidal irradiation (UVGI), photocatalytic oxidation (PCO), or ozone generation as a means to destroy pollutants can release ozone as a byproduct of their air cleaning technique. Ozone generators that are sold as air cleaners intentionally produce ozone gas, a lung irritant, to destroy pollutants.

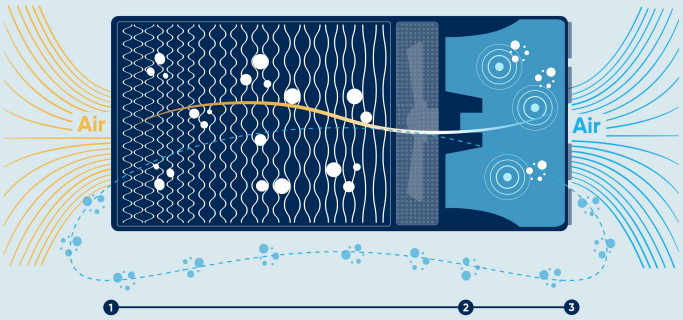
A general tip is to look for air purifiers that have been certified to meet the California Air Resource Board (CARB) ozone emissions limit of 0.050 parts per million (ppm) or 50 parts per billion (ppb). That's standard, and is mandated for manufacturers to sell air purifiers in the state of California.

Finally, while our focus here is not specifically on addressing IAQ issues related to the COVID-19 pandemic, it is important to note that air purifiers can play a role in helping to reduce exposure to SARS-CoV-2. Blueair was the first major air purifier brands to test live SARS-CoV-2 virus particles. Results from biosafety lab, MRI Global, show Blueair's HealthProtect™ 7400 series air purifiers effectively removed 99.99% of the live airborne virus (SARS-CoV-2) from an 0.37 m^3 biosafety lab test chamber.[4]

HEPASilent Technology

Post-filter electrostatic charge

(Applicable to Blue Pure, Blue Pure Auto models, DustMagnet, and Classic 205, 280i)

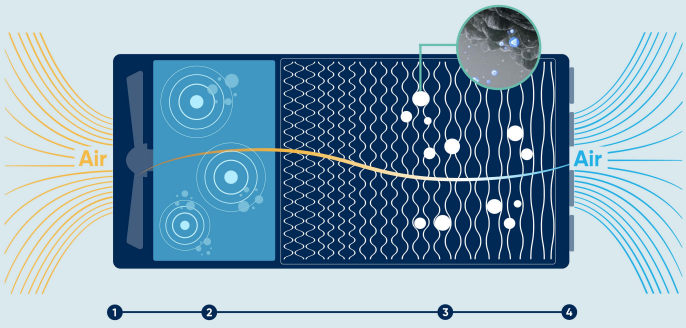


1. The ultra-silent fan draws air into the air purifier. Most particles in the air purifier are captured in the filter.
2. The particles that are not captured then receive a low electrostatic charge.
3. Blueair's airflow is designed for frequent recirculation so charged particles are quickly sucked into the air purifier, where they more effectively cling to the pre-filter and get captured.

HEPASilent & HEPASilent Ultra Technology

Pre-filter electrostatic charge

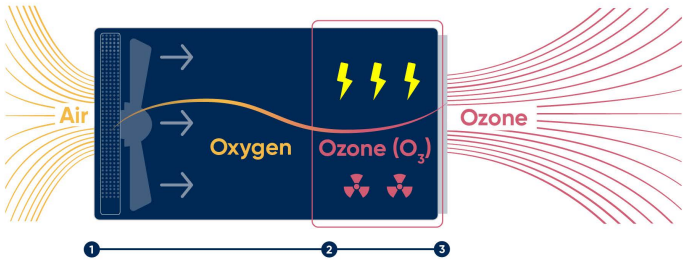
(Applicable to HealthProtect, Pro and Classic 405, 480i, 580i, 605, 680i models)



1. The ultra-silent fan draws air into the air purifier.
2. Particles inside the air purifier are given a low electrostatic charge.
3. The air is pushed through the filter and the statically charged particles can then cling more effectively to the filter and be removed from the air.
4. The room is filled with clean air once every 12.5 minutes.

Example of ozone generators:

Other methods of air purification



1. Oxygen (O_2) particles enter the cleaner.
2. The cleaner charges oxygen (O_2) particles with a high voltage or UV light and converts them into ozone (O_3).
3. The ozone generator air cleaner then emits ozone into the air to react with airborne particles and break them down.

Independent **Certification**

Evaluating air purifiers with third party certification is a great way to help narrow down the selection process and to help commercial real estate developers, and their facility managers, ensure that the products they select will perform as intended. Look for the following verifications or certifications:

- AHAM Verifide. The AHAM Verifide program is an independent program of the Assocation of Home Appliance Manufacturers (AHAM) to ensure that CADR performance testing results are accurate and impartial. The program is endorsed by both the U.S. Food and Drug Administration (FDA) and the U.S. Environmental Protection Agency (EPA). AHAM requires CADR tests and calculations to be performed in accordance with the ANSI/AHAM AC-1-2015 standard, which is the only air purifier standard recognized by the American National Standards Institute (ANSI). This specifies how the CADR of an air purifier is converted to relate to room size and how air purifying products are correctly marked.

- The California Air Resources Board (CARB) for safe ozone emissions. This indicates that the air purifier has been tested to show ozone emission levels of 0.50 ppm (50 ppb) or less.

- Zero Ozone Verification through Intertek testing lab, one of the most stringent ozone emissions standards available. Products with this designation meet or exceed all other nationally recognized and certification programs, emitting ozone concentrations of .005 ppm (5 ppb) or less.

- Quiet Mark. Quiet Mark is the international approval award program associated with the UK Noise Abatement Society charitable foundation. It encourages companies worldwide to prioritize noise reduction within the design of everyday machines and appliances and find solutions to noise problems. The Quiet Mark's noise testing is based on the decibel levels, tonalities, frequencies, and direct consumer feedback.

Cost **Considerations**

Considerations related to cost are important for organizations of all kinds and in all parts of the country. Cost considerations will include both the cost of the air purifiers you select and the costs (e.g., energy) to operate them). Installation and maintenance costs should also be considered. The larger your facility and the greater the variation there is in types of spaces, the higher your costs can be.

When selecting air purifiers for your setting make sure to look beyond unit cost to incorporate *all* of the cost considerations that will affect your budget today, and into the future. Our consultants can help you with this process and work with you to consider a variety of scenarios that can impact initial and ongoing costs.

Aesthetics

While aesthetics might not be your first consideration when choosing air purifiers, aesthetics *do* matter. Fortunately, today's air purifier options offer much in the way of style and choices that can be incorporated seamlessly into your commercial environments to support both attractive and functional design.

Additional **IAQ Management Features**

In addition to considerations related to the key features discussed above, you also have an opportunity to take advantage of new and advanced "smart" features on some models that can:

- Automatically adjust for changing air quality.
- Track changing air quality.
- Offer voice control through intelligent virtual assistants (e.g., Alexa).

Here's another consideration you may not have thought of—portability! The more compact and mobile the devices you select, the more flexibility you have to provide IAQ protection, especially in larger spaces. The ability to move your air purifiers around to wherever you and your staff, customers, visitors, and others may be gathering offers optimum customization and convenience.

Ongoing **Consultation**

Commercial facility needs change frequently. When they do, or when you have questions, you want the confidence of knowing that answers are at your fingertips. Blueair consultants work with you from the beginning to the end of your CRE project—and beyond. We're here to help answer your questions about maintenance and future needs as facility space needs and requirements change.

Our industry experience and experience with a wide range of other clients, ensures that we can help you make the right—and most cost-effective—choices for your facilities, wherever they may be located and whatever your unique needs may be.

Creating the **Ideal Environment**

The ideal environment for your facility will depend on where you're geographically located as well as the age of your physical structure. Building in colder climates, or areas that have been impacted by wildfires and other outdoor pollutants, have higher-level needs, for instance, than buildings located in areas where the weather permits for more time spent outdoors, and more open-air spaces.[5]

In addition to the size of the room (square feet) additional considerations to take into place when selecting air purifiers include how many people will be using the room at a given time, what they will be using it for, and what indoor and outdoor air considerations will come into play.

Throughout your **facilities...**

In offices, common areas, waiting rooms, and lobbies—throughout your facilities—improved ventilation and clean air circulation can dilute airborne contaminants, making a meaningful impact on the indoor spread of airborne viruses and bacteria. Studies have shown that the right air purifiers can have a positive impact on worker productivity.[6]

In **cafeterias...**

Cafeterias are crowded spaces where staff and others are often in close proximity and a lot of talking, laughing and, unfortunately, sneezing and coughing are going on. They're an excellent place that can benefit from the right choice of portable air purifiers.

In **conference rooms...**

Conference rooms are areas that, by their very nature, can give rise to air quality concerns, especially as the size of the groups in these rooms gets larger. Wherever people gather, especially in close proximity, airborne viruses and bacteria can proliferate. Air purifiers can help you ensure a safe and productive environment for your staff members to work together efficiently.

In **fitness facilities...**

Fitness facilities can be a valued employee benefit, but they can also represent risk from poor air quality. Air purifiers can provide big benefit. In addition, workout facilities are subject to a variety of air quality concerns. RTK Environmental Group points to research by the University of Colorado Boulder which indicates that "one sweaty, huffing, exercising person emits as many chemicals from their body as up to five sedentary people."

Even newly constructed facilities can represent air quality issues related to the building materials used and the type of equipment in a gym setting. Poor ventilation can be another concern.

Wherever people gather on your **commercial campus...**

Commercial facilities have a variety of unique indoor settings where people gather. Each of these settings has specific indoor air quality needs and considerations that need to be carefully thought through when selecting IAQ solutions. The size of the space, the number of people who come together at specific times and their proximity, the types of interactions they have, room ventilation, furniture, and other items in the room, access to fresh air, etc., are all things to keep in mind when taking steps to improve air quality.

Learn More About How Blueair Can Benefit Your Next Commercial Real Estate Project

Providing a clean air environment has always been important to ensure safety for staff and others and, as we've seen, is an aspect of the work environment that employees valued even before the pandemic. Now, though, with the importance of indoor air quality so top-of-mind, your staff, customers, and others are likely demanding more assurances that your indoor air quality is protecting their safety. Employers, of course, will also like to be assured that the quality of their indoor air is supportive of both a safe and a productive environment for employees.

Considerations related to the right IAQ systems and the most effective air purifiers can be complex. They don't have to be. When it comes to the core considerations when making a purchase decision that addresses safety, efficiency and effectiveness, sound, performance (certification), cost, and aesthetics.

Blueair gives you the comprehensive solutions to meet your needs. When you're ready to learn more, we have a team of experts ready to tailor an air purification plan for any CRE developer's needs.

About Blueair

Blueair was founded on the firm belief that the freedom to breathe is a basic right. Over two decades ago, our Swedish founder set out to make the world's best air purifier. By bringing together a team of talented designers and filtration experts who shared his passion for sustainability, quality, and design, the Blueair air purifier was born. Today, our award-winning air purifiers which combine superior performance and low noise with timeless Scandinavian design, are used by people in countries around the world. Since 2016, we are a proud member of the Unilever family of brands.

[1] *"What Employees Want Most from Their Workspaces," Harvard Business Review, August 2019*
[2] *"Residential Air Cleaners: A Technical Summary," EPA, 3rd Edition*
[3] *Based on internal testing of Blueair Classic 200-series on maximum fan speed in normal room temperature and humidity conditions, HEPASilent™ technology provides a higher particle Clean Air Delivery Rate (pCADR) than conventional methods of only mechanical filtration (at a defined energy consumption and/or noise level). Particle CADR measures an air purifier's delivery rate of particle free air ("clean air"). The particle CADR tests are made according to GB/T18801-2015 standard on a particle size of below 0.3 micrometer.*
[4] *Blueair purifiers are not proven to kill/prevent transmission of SARS-CoV-2 (COVID-19).*
[5] *"Why Wildfire Smoke is a Health Concern," EPA - 2019*
[6] *"Green Office Environments Linked with Higher Cognitive Function," Harvard T.H. Chan School of Public Health - October 2015*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