

5
steps

to achieving

clean
air

in your
building

The power behind **your mission**

Johnson
Controls 

One, two, three...breathe.

This phrase, and breathing in general is often associated with relaxation. Yet, how often do we think of the other impacts air can have, especially when it's not clean? We're all well aware of how air pollution impacts the air we breathe outside, but what is perhaps less known is how pollution, along with airborne viruses, can permeate the indoor air we breathe as well.

Introduction

Given the average person spends 90% of their day indoors, it's critical that the air they're breathing is clean and healthy. Viruses, such as COVID-19, can spread much faster in poorly ventilated indoor spaces. In fact, owing to this, it became extremely difficult to keep buildings open during the pandemic. Those that found a way often relied on technology. Specifically, 37% of businesses classified clean air technology as essential to keeping their buildings open during the pandemic. To avoid the spread of other, more common viruses, clean air technology will be similarly important.

Ultimately, as employees, customers and visitors return to buildings, it's important that businesses have the correct measures in place to keep them safe. More than that, though, a constant flow of clean air can **improve productivity by 11%**. To realise these productivity gains and create a healthier space, this guide outlines steps to consider for your indoor air quality strategy.



1 Ventilation

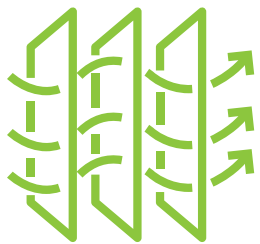
There is a direct correlation between occupancy, air quality and sustainability. Therefore, ventilation rates must be tailored to the number of people in a specific room or building. Currently, **CIBSE guidance** states that fresh air should not fall below 10 litres per second per person. This minimum standard exists to ensure carbon dioxide levels are reduced, which helps to prevent drowsiness and headaches. It's also crucial for controlling temperature levels within a building. However, even 10 litres per second is too low.

Achieving optimum levels of ventilation, while reducing energy use, relies on measuring and controlling occupancy and internal air quality (IAQ). If you want to truly reap the benefits of clean air, we'd suggest at least doubling the current ventilation recommendations to 20 litres per second. Balancing occupancy sustainability and IAQ can be done through smart building technology, in turn also reducing the risk of airborne viruses spreading.

It's important to ensure that your occupancy measuring and ventilation technology is connected. That will create a smart environment, where ventilation levels are continually optimised based on the number of people in the building or room.



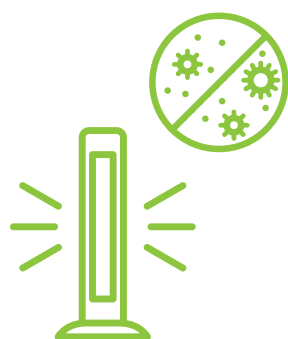
Your business can achieve this by using Johnson Controls' OpenBlue solution, which, by leveraging data analytics, ensures your technologies act as a smart ecosystem, rather than point solutions with a limited impact. This will allow them to learn from each other and make automatic changes based on occupancy.



2 Filtration

Filtration and ventilation work hand in hand. Where ventilation helps to reduce CO2 levels, filtration can help to eliminate viruses and particulate matter in the air. This is critical, given that viruses and particulate matter can have severe consequences on people's health. For example, as pollen counts increase year on year, hay fever sufferers are being impacted more and more. Filtration technology can be used to make your building a safe space for them, allowing them to be more productive. On a more severe note, it was only in December 2020 that the [UK reported its first ever death directly linked to pollution](#), demonstrating the importance of keeping air clean of particulate matter.

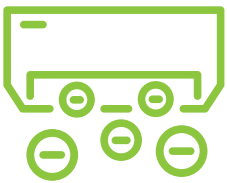
To effectively filter air coming into a building, your business can leverage the most up-to-date air filtration technology. By linking this with the ventilation shafts, you can ensure that air filters capture particulate matter and airborne viruses before staff and customers can breathe them in. In fact, with the latest clean air technologies, your business can capture 99.97% of airborne pathogens before they enter the building's atmosphere.



3 Disinfection

When it comes to removing airborne viruses from the air, filtration won't do all the work. The air that comes in through the ventilation shafts must also be disinfected to ensure the air is clean and safe to breathe.

One method of disinfecting air is through UV sanitisation technology. UV radiation has enough energy to break chemical bonds, while its ionizing effects can kill most bacteria, disabling their ability to reproduce and infect. UV lighting can come in various forms but, for clean air, the most common is HVAC, which is typically found in air handling units. The technology has also proven effective against COVID-19. For businesses looking to convince their staff back into the office, this can help to ease any concerns.



4 Isolation

Isolation is primarily important for healthcare organisations, but also presents benefits to wider businesses. For healthcare providers, it is recommended by national health agencies to place patients with suspected infection diagnoses in airborne isolation infection rooms. These negative pressure rooms ensure that airborne contaminants do not get re-circulated into the air, therefore reducing the risk of spread. For wider businesses, this technology can be implemented into spaces such as bathrooms, to contain odours and particles.

To set this up, organisations need technology which allows them to subtly control air pressure within the building. Using healthcare as an example, for some patients, such as those who suffer from autoimmune diseases, airflow has to be positive to ensure air is constantly flowing out of the room to keep it fresh and clean of contaminants which could cause infection. Meanwhile, if there's a patient suffering from a highly contagious virus, such as COVID-19, airflow has to be negative with more air flowing in so that the illness doesn't escape into the facility. **Johnson Controls' Triatek healthcare systems** make this a reality.



5 Monitoring & Maintenance

Having all these technologies in place will help businesses to keep their staff and customers safe and productive. However, there must be regular monitoring and maintenance to ensure all the technology is functioning optimally. A faulty or malfunctioning piece of equipment can be the difference between building occupants breathing clean air and breathing unhealthy air.

By connecting the smart technology with IoT devices, businesses can constantly monitor the technology's performance. Meanwhile, businesses can also use health performance indicators to measure the quality of the air and its impact. With this information, businesses can stay on top of maintenance and make improvements to their clean air strategy, leveraging the assistance of clean air specialists, if necessary.

These monitoring solutions can also be used to ensure that the building's performance is optimised based on the anticipated occupancy. Facilities teams can use the information to direct people in the building to certain areas and rooms, ensuring that the building is operating as efficiently as possible. This will help to bridge the gap between air quality and sustainability.



Conclusion

These technologies, systems and quality checks are all critical to achieving clean air. However, the ability to measure and manage occupancy is what underpins all of it. Rooms are often built with a maximum occupancy in mind. Therefore, room booking systems are necessary to avoid exceeding those limits. Occupancy measuring technology, which counts the number of people in a room, can then be installed and linked to the clean air technology to ensure there is an optimum level of clean air per person. Finally, it's vital that all these technologies are connected together, so that they can learn from each other and the data they produce to make automatic adjustments and improvements.

For businesses that are serious about clean air and all the benefits it can provide, these are the measures that need to be taken.

To learn how clean air can help your business, click [here](#) and find out more about OpenBlue Clean Air. Here, you can download our clean air report and solutions brochure, and book a consultation session to learn about how Johnson Controls can help you. Different industries might have different priorities, but let's make sure we're on the same page about one thing – for a better planet; a better working environment; and a better way of life, we all need clean air.



1 Ventilation



2 Filtration



3 Disinfection



4 Isolation



5 Monitoring & Maintenance

About Johnson Controls

Increase employee confidence and productivity.
Enhance student engagement and performance.
Attract and retain tenants...all with OpenBlue Clean Air from Johnson Controls. Our unique approach combines research-based solutions, cost-effective implementation, and ongoing service and support.

Contact us to discuss how we work with you to make spaces for living, learning and working safer, healthier and more productive.

For more details, please contact:

e: OpenBlueUK@jci.com

w: www.johnsoncontrols.co.uk/openblue

t: 0800 804 6229