

How to improve the air quality within your facility



We asked industry experts to share their thoughts on how to raise levels of indoor air quality within buildings to provide a healthier workspace to colleagues and clients

Increased focus on the quality of the air we breathe can be seen to have arisen within the drive to reduce our impact on the environment and create a more healthy atmosphere and has permeated almost every aspect of modern life.

The importance of improving indoor air quality (IAQ) has emerged as another essential topic within this, with added attention provided by the emergence of the Covid-19 pandemic and the reopening of facilities after the UK lockdown. In addition to appreciation of the benefits of creating healthy workplaces to assist everyone in working at their most productive levels, one of the aspects in reassuring staff that it is safe for them to return to their office has been improved ventilation to reduce any risk

of disease transmission.

Bearing the above in mind, we asked contributors whether achieving good IAQ levels could only be achieved through investment in plant and equipment.

Elta Group technical director and Fan Manufacturer's Association chair Alan Macklin says the recent focus on IAQ has meant FMs are increasingly concerned with providing fresh and healthy air to building occupants and the most important first step towards improving it is to assess the existing strategies in place.

A thorough assessment of the space should include looking at how old the building is, whether its purpose has changed over the years, and any variations in occupancy levels. These factors can impact the levels of

ventilation required to achieve good IAQ, and form an important part of any improvement.

"Alongside an examination of the building itself, FMs should also look at the existing ventilation system. How old is it, is a heat recovery system installed, how often has it been serviced and maintained, does it meet current building regulations? Matching this to an analysis of the building will allow FMs to identify where improvements can be made and target the area of greatest concern," he continues.

Further steps include a survey and measurement of CO₂, humidity, and temperature levels to provide a tangible reflection of how good IAQ is within the facility in question.

Once the above points have been

completed work can begin on the next steps. This could be as straightforward as repositioning supply and extract grilles, or it might require a more extensive upgrading or replacement of the ventilation system, including demand control functionality.

“It is crucial that FM’s adopt a strategic approach to ventilation. By looking at what they require for good IAQ, and comparing that to existing ventilation, it is possible to make improvements in an efficient and cost-effective way,” says Mr Macklin.

Additional thoughts are provided by Weiss Technik UK managing director Malcolm Youll, who says poor air quality and ventilation have long been associated with increased transmission rates of respiratory infections. Viruses, germs and bacteria spread easily, particularly in high-occupancy rooms. Efficient ventilation not only reduces infection rates but also improves air quality, staff wellbeing, and ultimately productivity.

“The current Coronavirus outbreak has increased awareness of hygienic room climate issues, ventilation and air-



Alan Macklin, Elta Group technical director

conditioning systems in public buildings. If planned poorly or not serviced properly, air conditioning units can quickly turn into transmitters of disease-causing germs,” he continues.

An effective ventilation system, augmented by air disinfection and particle filtration, can help to reduce the overall indoor infection risk from airborne particles by diluting and controlling airborne pathogenic material.

Air-conditioning technology control must be suitable for updates and expansion and must connect all components intelligently in a single system. New functions and the integration of additional components make building air-conditioning systems increasingly detailed and complex.

“Meeting the latest requirements for heating, ventilation and air-conditioning (HVAC), reliably and sustainably requires long-term investment security and flexible, long-term, modular solutions with scalable software and hardware that can be updated as needed,” Mr Youll concludes.

InnuScience says keeping the environment free of harmful chemicals is of crucial importance when assessing how good IAQ should be safeguarded.

One area triggering concern for some time is the quality of the air we breathe daily and



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especially for the professional cleaner at work. Parts of Europe, notably Scandinavia, have for some time legislated to keep fragrance amounts to a minimum in cleaning products used in the professional market.

This is based on research that identified the issues that volatile organic compounds (VOCs) generate, especially in enclosed environments, over time. VOCs cause deteriorating IAQ and generate 'sick building syndrome'. Some of them have a negative impact on the ozone layer.

These volatile compounds are present in many cleaning products and they take only seconds to enter the user's system. VOCs can cause discomfort among cleaning products users, producing symptoms such as eye irritation, allergic skin irritation, headaches, runny noses, fatigue and more.

Some VOCs can cause liver and kidney damage, while some are suspected or known to cause cancer. In cleaning products, VOCs come primarily from fragrances used excessively and solvents applied to deal with greasy deposits. Fragrances are used to mask unpleasant odours that arise after using ineffective cleaning products.

InnuScience co-founder and vice-president of Scientific Affairs Steve Teasdale concludes: "At a time where the quality of the air we breathe became a key beneficiary of the global lockdown, it has also highlighted that



Malcolm Youll, Weiss Technik UK managing director

in some more severe cases, the Covid-19 virus may have long term effects on lung performance, meaning the issue of VOCs will only intensify."

On a final note, Daikin product and training manager Martin Passingham says: "With Public Health England estimating that air pollution is responsible for between 28,000 and 36,000 deaths a year, FM's have a duty of care to maintain healthy indoor environments for their building occupants. Given the continued focus on energy efficiency, achieving high standards of IAQ

is a balancing act between air-tightness and ventilation – therefore a holistic approach should be taken to whole-building HVAC."

Meeting energy efficiency standards in buildings has seen enhanced insulation and air-tightness – but this often comes at the expense of fresh air circulation. With a growing body of evidence indicating that poor air quality affects everything from mental health to patient recovery and workplace productivity, the imperative to strike a better balance is clear, he continues.

However, simply opening a window is not always feasible in modern buildings, as many have been designed to remain closed for energy efficiency, safety reasons and prevent further ingress of outdoor pollution.

Ventilation should be designed-in from the outset as part of a whole building climate control system. Indeed, BREEAM assessments favourably reward HVAC systems that balance indoor and outdoor temperatures, while ensuring a supply of fresh air to occupants.

"Finally, to ensure systems perform as designed, it is crucial that they are properly installed, commissioned and serviced. Regular maintenance is a vital part and is particularly important when it comes to ventilation, as any build-up of dust or dirt can prevent ventilation systems from functioning as intended," says Mr Passingham. ■

