

A photograph of a modern office interior. In the foreground, there is a white rectangular table with several chairs that have dark grey backs and teal seats. Two large potted plants are visible in the background near a large window. On the right side of the image, a white rectangular air purifier on wheels is positioned near the window. The ceiling is made of light-colored wood planks.

Infection by aerosol transmission: minimising viral concentration in indoor air?

Air purifiers – a key component of hygiene schemes

While you are trying to implement the current hygiene and precautionary measures (Hands. Face. Space.), privately as well as professionally, we would like to look at the ventilation technology approaches in more detail. Regular ventilation of closed rooms has been at the top of the agenda since there has been a greater specific focus on the risk of infection through aerosols in indoor air. We explain the temporary use of air purifiers fitted with an appropriate particulate filter [here](#).

What can you do to protect yourself, your fellow human beings, acquaintances, colleagues and customers?

How can I keep my environment as free from viruses as possible?

How can I protect myself and my fellow human beings?

Which ventilation measures or technology are most effective?

You know best of all how to make the optimum use of the facilities in spaces familiar to you to comply with social distancing and other protective measures. You also understand how to estimate when a space seems too small for a specific purpose. And you are probably already used to taking appropriate disinfection and distancing measures in everyday life.

But we are now asking: „What else can we do to make our (working) life as safe as possible in the current pandemic and the concurrent influenza wave, and specifically in places people spend long periods of time together?“

Ventilate, ventilate, ventilate!

Scientists and epidemiologists are rightly calling for this to keep possible viral concentration indoors to a minimum, as only permanently high concentrations lead to infection from the indoor air.

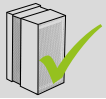
There are several ways of keeping the concentration low:

Continuous or at least **regular shock ventilation** by two windows opposite each other creating a draught in the room and thus causing a fast and effective air change. This is the simplest possible solution. But cold outside temperatures in autumn and winter make this difficult. Very few of us are then willing or able to open the windows every half an hour or so to ventilate a room as it would result in hypothermia, freezing temperatures and discomfort – anything other than a cosy and comfortable feeling.

The best possible solution is a **modern ventilation system** that supplies an adequate volume of outside air into the room and draws off ‘used’ room air. This ensures a constant air change, without the adverse effects of shock ventilation and without generating additional heating costs. In addition, the CO₂ proportion is maintained at a level that promotes optimum concentration and well-being. Unfortunately, most buildings are not equipped with a ventilation system, such as this. If you are nonetheless interested in a permanent solution, we would be happy to advise you with our almost 50 years of experience in ventilation systems and air conditioning. But the truth is that these systems require extensive planning and installation. This is time we clearly do not have at the moment.

Mobile air purifiers present a timely, practical and flexible alternative. At least for autumn and winter. Incorporating a highly efficient particulate filter, they are capable of filtering out 99.995 % of all viruses, germs, bacteria, pollen, grasses and house dust. This keeps any viral concentration in the room air below a critical level and even completely reduces it over time. And a positive side-effect: odours, pollen and house dust, cigarette smoke and other substances in the air are also filtered out.

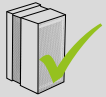
When does the use of air purifiers make sense?



When people spend a relatively long time or temporary period in certain premises for private or professional reasons.



Adequate ventilation is impossible as the windows can only be tilted open, there is no through-draught caused by windows opposite each other, or the outside temperature is too cold.



There is no ventilation system installed that is capable of supplying adequate volumes of outside air.

How does an air purifier work?

Air purifiers were originally used in the medical sector. Hospital rooms for highly sensitive patients or operating theatres need to be free of germs and viruses. But allergy sufferers also appreciate the benefits of mobile air purifiers during the flowering and pollen season. They work on the principle of a vacuum cleaner. Air purifiers draw in the air in the room and anything that is not intended to be released outside is held inside the housing in a special filter, or more precisely, in a Class H14 HEPA particulate filter.

Apart from house dust and pollen, this also includes a large proportion of germs and infectious viruses. Without a host, viruses break down in the filter after a few hours and thus no longer pose a risk of infection. Centrally positioned in a room, an air purifier circulates the room air several times per hour, depending on its performance or the level at which it is operated.



How does a person become infected via aerosols and how can an air purifier prevent this?

The aerosol infection scenario is currently being investigated. It is assumed that an infected person enters a room bringing with them a viral load for the room air. The person can do this by **breathing normally, talking, singing, sneezing or coughing**.

These viruses spread themselves around the room, depending on its size and volume. The longer the infected person stays in the room, the higher the concentration of viruses will be. A further assumption is that the higher the virus concentration of an infection, the higher the risk of a severe progression of a disease. However, these findings are not yet regarded as confirmed.

The current scientific knowledge confirms that infections are unlikely providing the viral concentration is below a certain level per cubic metre of room air. These assumptions are based on individuals with an average good immune system. An air purifier can help to keep this concentration low by filtering the air.

Use of filters

Air purifiers are fitted with so-called particulate filters, also known as HEPA filters (High-efficiency Particulate Air Filters). Kampmann KA-520 air purifiers use a Class H14 filter, which filters out 99.995 % of the particulates suspended in the air, including bacteria and viruses, such as Covid-19.

The filter needs to be changed regularly on the unit, indicated by an LED light. Depending on the level of pollution in the air, we assume that the filter in the KA-520 air purifier will last for around 800 operating hours. Based on an 8-hour working day, this equates to around 100 operating days. The filter is easy to change and takes no longer than 5 minutes. The filters can be packed in a plastic bag and disposed of with normal household waste.



What is being filtered?

The integrated, powerful and easy to change HEPA filter removes viruses, allergens, bacteria, pollen, mould, mites, house dust, industrial fumes, household fumes, cleaning agents, car exhaust fumes, animal sheds and smoke.



Information on use

The models appropriate for specific room sizes are listed below, enabling you to estimate the model appropriate for your premises. Combining several units makes sense in larger areas to spread them out throughout the space.

However, it is crucial that the operator is properly trained to guarantee their efficient use. The air purifier should preferably be positioned in the centre of the room. If there are several air purifiers in a room, they should be positioned sufficiently far apart.

Operating stage I is generally recommended for continuous and low-noise operation. Operating stage II ensures rapid air purification, for instance during breaks.

The effectiveness of the KA-520 air purifier for "particulate and microbiological reduction in the room air" was confirmed by the HYBETA Hygiene Laboratory. It is also hygiene-certified to VDI 6022. Detailed videos on how it works, useful accessories and contact details are available directly online.

www.kampmann.co.uk/air-purifier-ka-520

Models

L

up to
330 m³/h

Air purifier KA-520 L

The unit of choice for small sales floors, offices, meeting rooms and staff rooms.

Air flow up to 330 m³/h

XL

up to
720 m³/h

Air purifier KA-520 XL

The XL version effortlessly purifies large rooms, including waiting areas, open-plan offices, seminar and meeting rooms. Its use can be scaled up to the size of the room through the use of several units. Air flow up to 720 m³/h

XXL

up to
1340 m³/h

Air purifier KA-520 XXL

The 2XL version is designed for high-performance requirements in larger areas, such as reception foyers, open-plan offices, event rooms and sales floors.

Air flow up to 1340 m³/h

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