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COVID-19: Whether or not new filters make sense in ventilation and air conditioning systems

We are receiving a lot of questions on the topic of COVID-19 in connection with air conditioning and ventilation systems. For the most part, however, reliable information is still sparse. The following answers and recommendations are based on the knowledge that is currently available.

1. Can the virus be transmitted through a ventilation and air conditioning system?

On the basis of knowledge currently available, the virus is predominantly transmitted through relatively large droplets ($> 5 \mu\text{m}$), e.g. when a person speaks, but particularly when they cough or sneeze. The virus can thus be spread through the air across a distance of up to roughly 1.5 metres – which is what prompted the recommendation to maintain a safe distance of 2 metres from people. Gravity causes the droplets to fall quickly and thus contaminate surfaces. The few existing measurements that have been done to date suggest that the risk of airborne viruses is low. There is no evidence of any infections through ventilation and air conditioning systems, neither with the SARS virus, nor with COVID-19. Experts consider transmission via ventilation and air conditioning systems to be very unlikely.

2. Are there filters that are capable of filtering out COVID-19?

Yes, there are. Particulate filters are especially suited to the separation of viruses and bacteria. A H13 filter has a separation performance of 99.95% in the minimum filter efficiency range (approx. $0.2 \mu\text{m}$). However, these filters are typically only used for sensitive areas such as cleanrooms and operating theatres in hospitals. The installation of such filters in ventilation and air conditioning systems in offices, for example, would mean a high pressure loss and, consequently, higher energy costs. As the transmission of corona viruses through ventilation and air conditioning systems has been virtually ruled out, the use of these special filters is not required.

3. Are there special recommendations for action with respect to ventilation and air conditioning systems?

Yes. For example, ventilation and air conditioning systems that use outside air should not be switched off, fresh air flow rates should not be reduced and the proportion of recirculating air, if applicable, should be reduced in favour of outside air. The operating times of systems should be extended before and after the regular time of use, if required. On the other hand, cleaning ducts more frequently or changing filters has no apparent effect as long as regular maintenance is reliably implemented in accordance with the recommendations from VDI 6022 and VDI 3810 Sheet 4.

Further information can be found on the VDI under <https://www.vdi.de/news/detail/die-keimkonzentration-reduzieren> and in the common recommendation for Ventilation and Air Conditioning on COVID-19 from BTGA, FGK and the German Association of Ventilation and Air Conditioning Equipment Manufacturers at www.troxtechnik.com



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