

## Protective health measures: Room air purifiers can significantly reduce the spread of corona virus indoors



Manufacturers are preparing for increased demand from medical offices, public establishments, schools or business offices as more and more companies and institutions are investing in mobile room air purifiers in order to reduce the risk of corona virus infection.

**Medical offices, government institutions, schools or business offices: Numerous companies and institutions are investing in mobile air purifiers to reduce the spread of corona virus infection. Ulrich Stolz, Head of Technical Engineering at Keller Lufttechnik, explains the benefits of installing room air purifiers, and what one should keep in mind when choosing such a device.**

Ulrich Stolz is Head of the Technical Engineering Department at the leading air pollution control specialist, Keller Lufttechnik in Kirchheim unter Teck near Stuttgart. For years, he and his colleagues have been designing processes to filter out the smallest airborne particulate. This includes fine dust, pollen, spores, bacteria, and viruses. "HEPA quality filters (HEPA H14) are used to separate these particles," says Stolz. This technology has been utilized in the medical field and has been proven to remove 99.995 percent of viruses from indoor air. Statistically, this means that only five out of 100,000 disease-causing particles might remain.

### New Recommendations

Wouldn't the widespread use of such devices provide a perfect solution against the spread of the corona virus? Stolz adds a word of caution: "While the use of such devices is quite advisable, in order to minimize the risk of infection, a combination of several measures is necessary," he says. "My simple advice is this: Maintain your distance; observe all rules of personal hygiene; wear a mask; ventilate, and use room air purifiers."

### Understanding the characteristics of transmission

To understand why such a comprehensive range of measures is recommended, one needs to understand how the virus spreads. Presently, scientists assume that around



State-of-the-art room air purifiers are compact, mobile and easy to operate. They significantly reduce the risk of corona virus infection inside rooms where large numbers of people congregate.

45 percent of those infected become infected through direct contact. This means that they inhale virus-laden droplets that corona patients exhale such as while coughing (droplet infection). Ten percent become infected via contaminated objects (surface infection). >

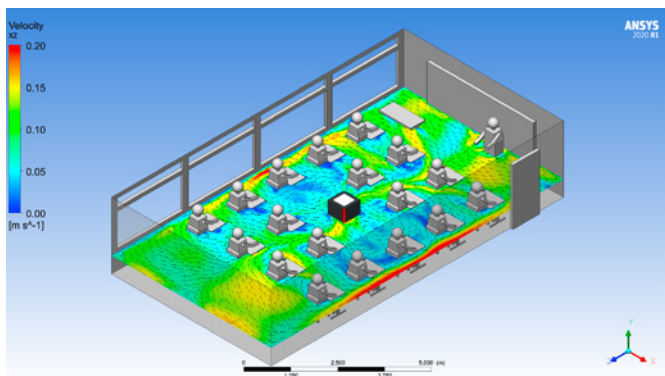
Another 45 percent (probably more) are infected indirectly. This means that they become ill because they stay indoors where the air is heavily polluted with viruses. In this case, the risk is not posed by the "larger" droplets, because these quickly sink to the ground. Infected individuals also release virus-contaminated aerosols. These aerosols measure less than five micrometers and are very light, allowing them to remain airborne, sometimes for hours, posing a risk for infection.

### Blocking all sources of infection

"No matter how effective air purifiers may be, they cannot prevent direct infection via airborne droplets. Consequently, it is vital to maintain a safe distance from others and to wear masks. Additionally, only scrupulous hand hygiene can effectively prevent infection from contaminated surfaces," explains Stolz. "Our room air purifiers have demonstrated their potential benefit when it comes to the indirect



Inside classrooms where many people congregate for hours, the risk of infection is comparatively high. Ventilation is helpful only to a limited extent. However, the use of mobile air purifiers can reliably reduce the risk.



The flow simulation proves that our air purifier successfully cleans the air inside a room measuring 70 sq. meters, using a sufficient air flow for a high rate of virus removal.

means of infection via aerosols indoors. They reliably and consistently reduce the concentration of these particles to well below the critical level of infection. This result cannot be achieved merely by regular ventilation, which has frequently been advised until now." However, Ulrich Stolz keeps the recommendation for ventilation in his advice. He explains, "For a healthy room atmosphere, a regular inflow of fresh, oxygenated outdoor air is nevertheless essential. We've neglected its advantages far too often".

### Ideal for medical offices, institutions, schools, restaurants...

The use of mobile room air purifiers is especially vital in areas where different people congregate repeatedly in a somewhat confined space over a longer period of time, says Stolz. He offers examples such as waiting areas in medical offices, inside classrooms, training and meeting rooms as well as in cafeterias, restaurants and retail establishments.

### Criteria for choosing a device

Air pollution control expert Ulrich Stolz recommends anyone interested in purchasing such a device to pay attention to the following five conditions:

#### High separation efficiency

The device should be equipped with an H14 HEPA filter, which filters 99.995 percent of all viruses (bacteria, pollen, spores, fine dust ...) from indoor spaces.

#### Sufficient air flow

The air purifier should effectively exchange the room air at least six times per hour.

#### Proper airflow

In order for the device to effectively capture the air in all parts of the room, the following air flow is important: The room air purifier suctions in the air at the bottom of the unit from all directions (360-degree suction) and releases cleaned air upward towards the ceiling. This creates a rotating air flow that flushes the entire room with virtually virus-free air.

#### Acceptable noise level

Which decibel level (dB(A) value) a user considers acceptable depends on his noise sensitivity and the acoustic characteristics of the room. Ideally, one ought to be able to try out the air purifier on site. An important note: manufacturers will frequently specify the decibel level of their devices at their lowest power setting. However, this is rarely the level at which the device must be operated in order to achieve the required rate of air exchange.

#### Ease of use

Depending on its intended use, the device should be easy to operate. Most air purifiers do meet this criterion. The user need only connect it to a power source, select an appropriate power level and turn it on. <



## Online consultation with air pollution control experts

Want to learn more? Keller's specialists offer online consultation via Microsoft Teams on the subject of "Mobile room air purifiers: a contribution to corona virus prevention". Anyone interested in taking advantage of this service can pre-register at: [ambicube@keller-lufttechnik.de](mailto:ambicube@keller-lufttechnik.de)