

## Metisafe Portable Air Purification Devices; Room Pressurization with Efficient Particle Reduction Performance

As with many other airborne infection agents, droplet and/or aerosol contamination is critical in the spread of Covid-19 in the community. With the decrease in temperatures the amount of virus suspended in indoor environments accumulates, and the possibility of breathing the high virus load that can cause illness increases. At this point, the importance of effectively reducing the number of viral particles in closed environments becomes even more important.

While there are many portable air purifier models available, hundreds of more models have been put on the market after the pandemic and continue to come out with new manufacturers.

The most basic criterion is the selection of an air-cleaning device suitable for the number of air cycles and the room volume. Criteria such as filter types used in the device, air flow properties, device design, and CADR value that shows the actual particle reduction efficiency over time determine the selection of the appropriate device.

Reducing the amount of aerosol in the air with HEPA filtered air recirculation is not the only criterion in preventing airborne infection contamination in closed environments. In situations such as pandemics, there is often a need to prevent aerosol escape from contaminated rooms to others. Or, in environments where persons with suspected infections need to be intervened, particle leakage into neighboring rooms should be minimized. Particle leaks into the surrounding rooms can be prevented by keeping these closed environments accepted as contaminated under negative pressure. The rooms used by healthcare professionals can be kept under positive pressure to increase the protection of the personnel against infective aerosols.

In order to be able to pressurize in closed environments, there should be air exchange between the outside and inside the room. In order to create negative pressure, air must be exhausted from the inside of the room, and fresh air must be taken from outside the room to create positive pressure. Safety should be ensured by means of filters in these air exchanges. This process can be carried out by means of a fan, independent of the air cleaner device. In ventilation done in this way, it becomes uncontrolled due to the particle drop efficiency and the deterioration in the airflow dynamics, and sometimes it can create dangerous situations. Besides, there is a need for a second device, and an uncomfortable environment with a relatively high noise level is created.

Figure 1. Negative Pressuring with Metisafe AC-1500.

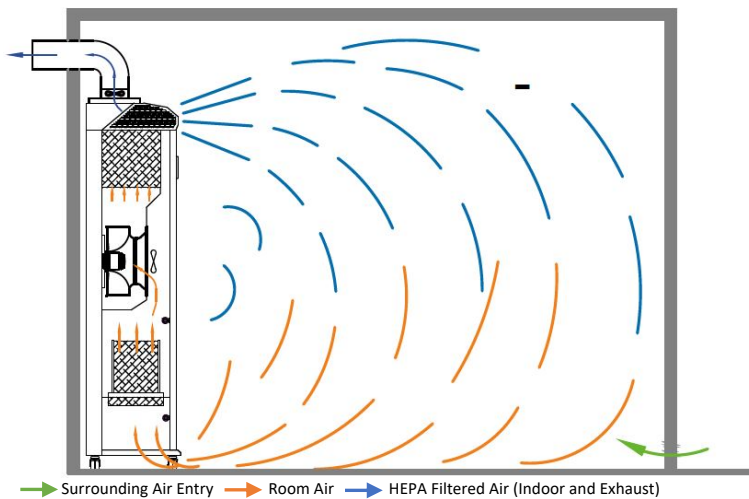
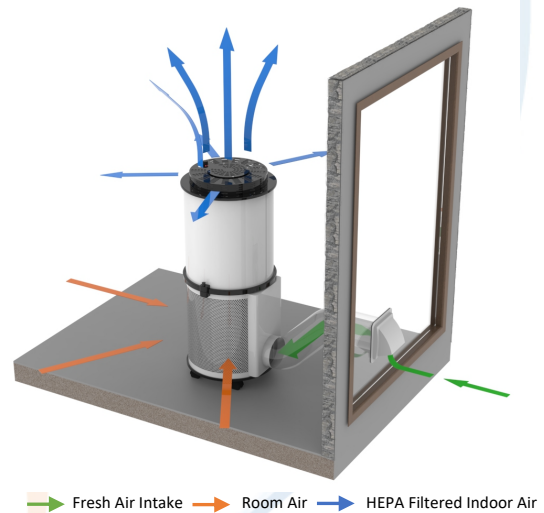


Figure 2. Positive Pressuring with Metisafe AC-500/AC-750.



Metisafe has been applying airflow dynamics that create room pressurization through Portable HEPA filtration devices in its production designs for more than 10 years. Pressurization is performed without the need for an additional device by establishing a connection between the ventilation duct opened on the window or wall and the air cleaning device through simple connection apparatus. Filtered air recirculation and controlled room pressurization are automatically carried out in Metisafe devices, depending on the leakage situation of the room or by adjusting the desired amount of air exchange. Both recirculation and, positive or negative room pressurization can work integrated by using H13 / H14 HEPA filters in Metisafe's AC-1500, AC-750, and AC-500 models.