InerTec AG
Switzerland

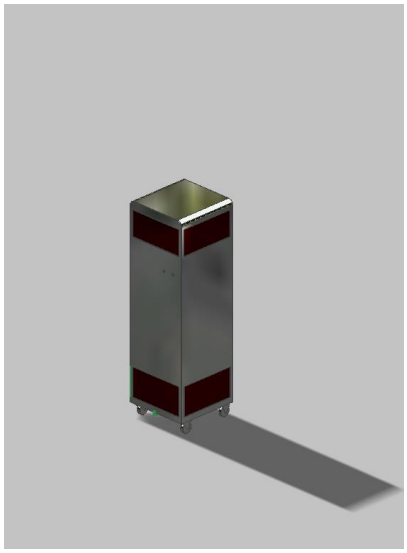
Air cleaner

Massively reduces viruses, bacteria and fine dust

Description of function

Description of the devicel

With the use of air filter systems, a large amount of air is circulated and thus cleaned of airborne viruses and bacteria. Thus, the air quality in the surroundings is massively improved.



Model: Air cleaner plus **Dimensions: (W x D x H) mm** **= 620 x 620 x 2200** **Price: CHF 14'500.00 without VAT, Free delivery**	**Model: Air cleaner medi** **Dimensions: (W x D x H) mm** **= 420 x 420 x 1800** **Price: CHF 9'650.00 without VAT, Free delivery**	**Model: Air cleaner mini** **Dimensions: (W x D x H) mm** **= 320 x 320 x 1200** **Price: CHF 5'565.00 without VAT, Free delivery**

Room size	Complete air change after	Recommended device type
Open space (closer working environment) approx. 5 m^2	4 minutes	Air cleaner mini
Closed space at 25 m^2	4 minutes	Air cleaner medi
Closed space at 50 m^2	8 minutes	Air cleaner medi
Closed space at 100 m^2	6 minutes	Air cleaner plus
Closed space at 150 m^2	9 minutes	Air cleaner plus
Closed space at 200 m^2	12 minutes	Air cleaner plus

With the air filter, aerosols are massively reduced directly at the point of use.

Using the air filter creates an area of clean air that is largely free of germs, fine dust or other airborne microparticles.

Air filter plus reduces the risk of infection for your staff and protects your products from fine dust pollution

- Reduce the risk of infection for your staff
- Reduction of production downtime due to fine dust

Simple operation: plug and play

Uniform air distribution: distribution grille with individually adjustable vertical and horizontal guide blades. With an additional throttle element, consisting of an inclined aluminum valve body, with an openable front flap. The guide rail return tabs ensure even air distribution over the grate surface.

In systems with a large air exchange, it is not always possible to keep the occupied area free of drafts. The good regulating capacity of the diffusion grille with the individually adjustable air guide blades allows the movement of primary air to be directed in such a way as to avoid drafts in the most important places where people stay. The air guide louvers can be changed using a DG louver adjustment button

Mobile and robust: Stable wheels with braking function make it easy and trouble-free to move the air filter to the location that suits you bestAvantages pour la pratique:

- Connect and use
- Ultra-quiet operation <45 dB
- Room air intake from below, clean air outlet from above
- Monitoring of filter saturation

System explanation	**<u>Models air cleaner plus, medi and mini</u>**
	There are 3 color variants available: white (RAL 9016), black (RAL 9005) and light gray (RAL7035). Other color requests on request.
Particularity	► The dimensions of the air filters can be designed flexibly and can be adapted to individual customer requirements at an additional cost.
	► Ultra-quiet high-performance fan is built on a vibration damper.
Technology	► Flow monitoring and automatic readjustment of the volume flow guaranteeing a constant volume flow even with increasing saturation of the filter..
	► Filter contamination indicator: the alarm lights up when the maximum filter saturation is reached. When the alarm light appears, the filter should be replaced in the coming weeks.
	► No alteration of personnel by air flow
	► Ultra quiet operation 43 dB (A) (currently with the quietest fan on the market
	► Individual dimensions
Additional benefit	► The use of the air filter allows a large amount of air to circulate and thus eliminate viruses and bacteria suspended in the air. Thus, the air quality in the surroundings is considerably improved.

Équipment

Prefilter

Pre-filtering of the ambient air is carried out via an easily replaceable pre-filter of filter class F7. The pre-filter is designed for high flow rates and long filter life

Fine filter

The particles are separated using a high performance H14 class HEPA filter. The degree of separation of this filter is 99.995% according to EN 1822. Thanks to the easy-to-maintain design of the device, the filter can be changed easily and inexpensively at the installation site.

Fan

The air flow is generated by high performance ventilation modules with energy saving motors. The impellers are finely balanced statically and dynamically. The compact module enclosures are made of sheet aluminum. Very quiet operation 43 dB (A) at 0.20 m / s.

Air purification by filtering

Are Hepa filters too coarse?

The problem with filter-based cleaning devices is that the virus itself is too small to be reliably intercepted. Hepa filters can trap particles up to 300 nanometers. However, the diameter of Sars-CoV-2 is only about 100 naometers.

Profile of bacteria and viruses.

	Bacteria	**Virus**
Size:	100-700000 nanometer	20-300 nanometer
Plan:	unicellular beings own metabolism and own cell	not a living being no metabolism and without cell
Proliferation:	cell division	host cell

Bacteria are living things, viruses are not

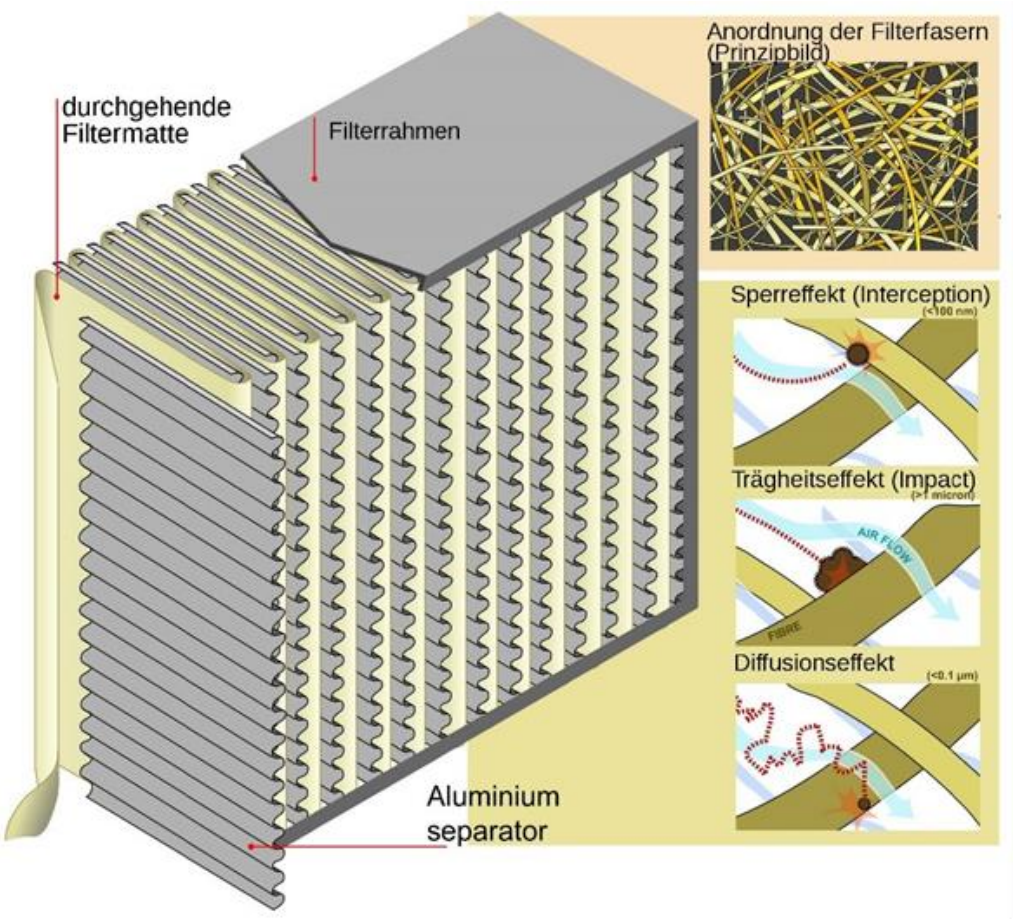
Coronavirus on surfaces

- Smaller particles stay in the air for a long time and can be easily inhaled, while larger particles settle on surfaces and are transmitted by passive infection (touch, inhalation).Le virus SARS CoV-2 se comporte apparemment comme d'autres types de virus et peut rester actif sur les surfaces pendant quelques heures à plusieurs jours.
- Viruses on surfaces can loosen again by air turbulence or vibrations and form aerosols again.
- Even in a calm environment, the vortex and stabilization may continue until the virus is inactivated. • The virus remains active on plastic surfaces for a particularly long time - usually 7 to 72 hours.
- In closed rooms, the air must either be discharged directly into the environment or, in recirculation mode, filtered through a highly efficient HEPA filter.

A HEPA filter is used to filter the air in reputable devices. HEPA filters (HEPA = High Efficiency Particulate Air Filter) are made of a tangle of filter fibers of different strengths and chaotically intertwined. This system allows even the smallest particles, bacteria, fine dust, mold spores and pollen to be filtered out of the air. The exact degree of separation differs between different classes of filters. Most air purifiers are equipped with HEPA H13, which can filter 99.95% of particles up to 300 nanometers from the air. In the European Union, these filters are classified according to "European standard EN 1822-1: 2009". Many companies therefore refer to their filters as "True HEPA filters" and add the degree of separation as a percentage..

Beware of questionable filter names from particularly smart marketing strategists! They refer to their filters, which do not belong to the tested HEPA category, as “HEPA-style”, “HEPA-type”, “HEPA-like” or - especially clever - “99% HEPA” to make it look like potential customer that it is a true certified HEPA filter.

Le processus de séparation des particules dans le filtre se déroule généralement de quatre manières différentes:



Source: Wikipédia

- Barrier effect: smaller particles that follow the air flow around the fiber when they get too close to the filter fiber.
- Inertia effect: larger particles do not follow the air flow (around the filter fiber), but due to their inertia, collide against it and adhere.
- Diffusion effect: Very small particles (<1000 nm) do not follow the air flow, but rather have a flight path similar to Brownian motion due to their collision with the air molecules and thus collide with the air molecules. filter fibers, to which they adhere.
- Sieve effect: filtering like a sieve, excessively large particles cannot make their way through the filter openings.

After a while, this reduces the effectiveness of the filter because its pores are clogged. It is therefore necessary to ensure that the air purifier has a pre-filter, which improves the longevity of the HEPA filter.

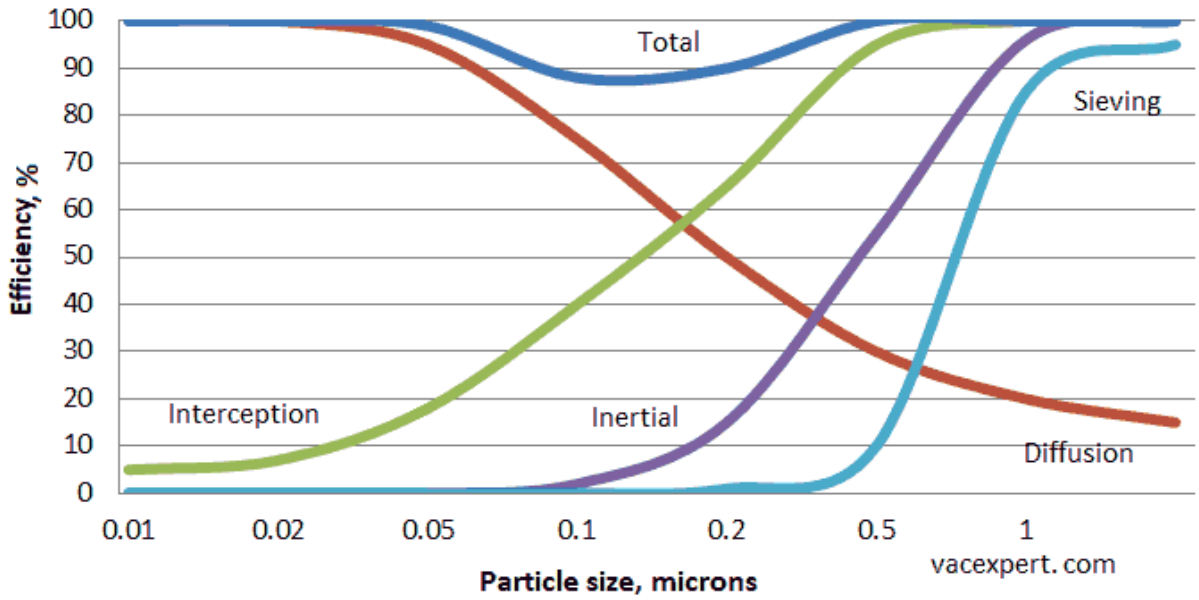
What exactly does this mean for viruses and bacteria?

Most of the known types of bacteria are between 500 and 10,000 nm in size. In principle, they are completely filtered out of the air. Trapped in the filter, they cannot survive for long.

In the case of viruses, this is a bit more difficult to tell because they are much smaller (15 - 440 nm). These particles can actually slide through the filter (remember: 99.95% of particles up to 300nm are captured) because they are small enough. But don't forget about the diffusion effect described above. Because parts smaller than 1000nm (significantly larger than viruses) no longer strictly follow the airflow and therefore often get stuck on the filter fibers. This means **that HEPA filters definitely reduce viruses in the air, including corona viruses!** The corona virus is 120-160 nm in size and therefore also has a trajectory similar to Brownian motion.

But beware, it sounds too good to be true, doesn't it? Quite a bit, because it also means that some of them can safely fly through the filter without getting caught. Unfortunately, the corona virus is exactly the size where the HEPA filter is least effective. As shown in the graph below, the filter captures “only” 90% of particles with sizes around 100nm.

But that's where the crux of the matter lies: after all, almost 90% of corona viruses are caught!



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Intercept = blocking effect
Inertial (Impact) = inertial effect
Diffusion = diffusion effect
Sieving = sifting effect

What: vacexpert.com.

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N'hésitez pas à nous contacter si vous avez des questions, votre équipe InerTec AG

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