erbe
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IES 3

SMOKE EVACUATION SYSTEM

The IES 3 smoke evacuation system can effectively filter SARS-CoV-2 viruses with a very high probability.

Currently, there is no research on the transmission of the SARS-CoV-2 virus through surgical smoke and no guidelines available on how to deal with smoke evacuation equipment after treating a Covid-19 patient.

What information do we have?

According to current knowledge, the particle size of the SARS-CoV-2 virus is between 60 and 140 nm.[1]

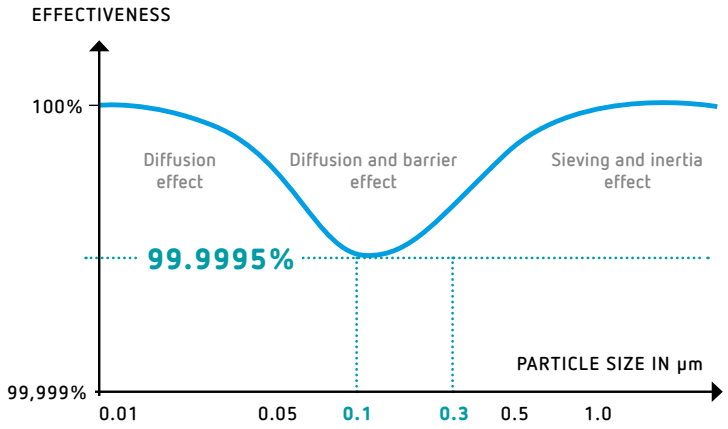
The best practice for mitigating possible infectious transmission during open, laparoscopic and endoscopic procedures is to use a multi-faceted approach, including smoke evacuation devices.[2]

Efficiency of our smoke evacuation systems concerning SARS-CoV-2 virus?

We can assume that our smoke evacuation devices effectively filter SARS-CoV-2 viruses with a very high probability, because:

1. The main filter cartridge for IES 2, IES 300 and IES 3 contains a **ULPA-15 FILTER THAT REMOVES 99.9995 % OF ALL PARTICLES FROM 0.1 µm.** (0.1 µm = 100 nm)

   The diameter specification of 0.1 µm to 0.3 µm responds to the worst case for the ULPA-15 filter, which means this particle sizes represent the most penetrating particle sizes (MPPS).[3]



   Particles that are smaller than 0.1 µm and particles lager than 0.3 µm are trapped with even higher efficiency than 99.9995 %, due to physical mechanisms like diffusion effect, barrier effect and sieving effect.[3,4]

2. Apart from the particle size, filter efficiency is also influenced by the inflow velocity. That means if the volume flow is too high, the filter efficiency is compromised.

   Therefore, we limited the maximum volume flow of the IES 3 to 300 l/min to ensure a reliable filtration performance of 99.9995 % of all particles at each possible device setting.[5]

3. In addition, we use a special sealing process for the IES 3 filter cartidge to ensure that there are no gaps between the individual filter stages and the housing, thus preventing particles from flowing past the filter.

4. We recommend the use of a pre-filter for each use of IES 2 / IES 300 and IES 3 for protecting the main filter cartridge from contamination with coarse particles. When using IES 3, we additionally recommend the use of a water trap, which protects the main filter cartridge from liquids. The optimum filter efficiency is thus ensured over the entire filter life.

5. Our smoke evacuation units can only be combined with our tested filter cartridges.

Further personal protection measures, such as FFP-3 masks, additionally increase the safety of the operating personnel.

Change of the filter cartridge

We currently have no information that it is mandatory to change the main filter cartridge after the treatment of a Covid-19 patient.

For further risk reduction, you should replace the filter cartridge after treatment of a Covid-19 patient.

When replacing the main filter cartridge, please wear appropriate protective clothing and proceed concerning replacement and disposal as in the case of potential contamination with other viruses in accordance with your in-house hygiene guidelines.

1 https://www.nejm.org/doi/full/10.1056/NEJMoa2001017
2 https://www.facs.org/covid-19/clinical-guidance/surgeon-protection; https://www.aorn.org/guidelines/aorn-support/covid19-faqs
2a https://www.luftfilterbau.de/de/filtertechnik/index.html
3 Schwebstofffilter (EPA, HEPA und ULPA) - Teil 1: Klassifikation, Leistungsprüfung, Kennzeichnung; Deutsche Fassung EN 1822-1:2019; Gail, Lothar, Hortig, Hans-Peter (Hrsg.): Reinraumtechnik, 2. A.; Springer-Verlag Berlin Heidelberg 2004, ISBN 978-3-662-09732-8
4 Test Report – No. APS 20005219 "Determination of the separation efficiency of filter media according to DIN EN 1822-3 and air filters according to DIN EN 1822-5"

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