



HEPA filter & UVC. A Comparison

HEPA filter

UVC air purification

		
What does it do ?	Catches particles including micro organisms and inert but never the less harmful particles such as soot particles. In other words filters are broad spectrum and bring wider benefit than just catching viruses.	Deactivates airborne micro organisms including viruses, spores, and bacteria. When sized and designed for one target organism it will by default have increased efficiency on all those micro organisms requiring a lesser UVC dose and decreasing levels of efficiency on those requiring a larger UVC dose.
How efficient is it ?	By EN1822 standard against MPPS a... H13 filter will be over 99.95% efficient H14 filter will be over 99.995% efficient	Induct UVC array can be sized and specified per application to achieve over 99.95% deactivation on covid-19 and if required can be specified to as high as 99.995% deactivation.
Provable performance ?	Provable by EN testing standards.	Provable by standard UVC micro organism deactivation dosage information and application/product specific modeling.
Installation	Holding frames installed into AHU. The effective sealing of frames to skin of AHU is critical to ensure overall efficiency of installation is as close as possible to the efficiency of the HEPA filters put in the frames. Integrity of the seal between the HEPA filter and the holding frames also important. Additional pressure resistance from HEPA filters particularly when dirty will necessitate either modifications to, or change of the fan(s).	In duct UVC array is very quick and easy to install. It is installed ideally in the supply duct down stream of the AHU where it can benefit from relatively clean air afforded by the fine filters protecting the coils. The array is mounted on a pair of struts that span the inside of the duct so that the UVC array sits central in the air stream and parallel to it. The array is connected to a control panel that contains the ballasts that power the lamps.
Running cost	The running cost to a bank of HEPA filters comes from; a. the periodic filter changes that will be required. b. the pressure drop range of around 200- 600Pa though the life of the HEPA will cause increased energy use and of cost.	The running cost to an induct UVC array comes from: a. the periodic lamp changes that will be made ever 2 years or so. b. the power to the array of lamps (about 260w) will cause a modest increase in the cost of treating the airflow. However there is almost no pressure drop burden to affect the power consumption of the fan
Advantages	Catches inert particulate matter as well as micro organisms so wider scope of benefits to building occupants	Fraction of the running cost compared to a bank of HEPAs. When factoring filter changes, lamp change, it is typically only 15-25% of the cost of running HEPAS Very easy to fit in ducting
Disadvantages	Expensive, costly and fiddly to install as more work needed for holding frames, seals and fan modifications Might not be space in AHU to accommodate a bank of HEPA filters Costly to run	UVC does not catch particles. It only deactivates biological particles Care needs to be taken if installing in air handling units to protect plastics within AHU from direct UVC light and to have door interlocks to prevent direct sight of UVC in operation