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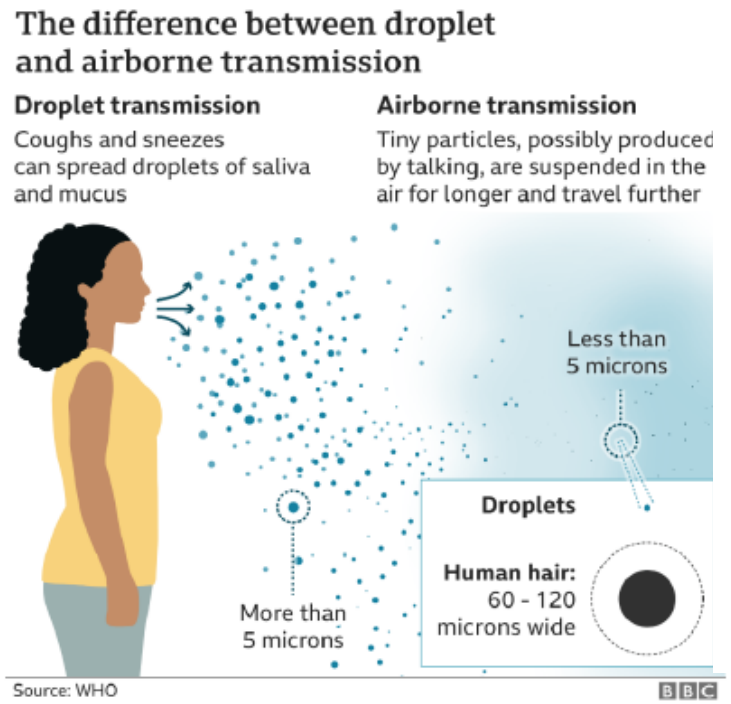
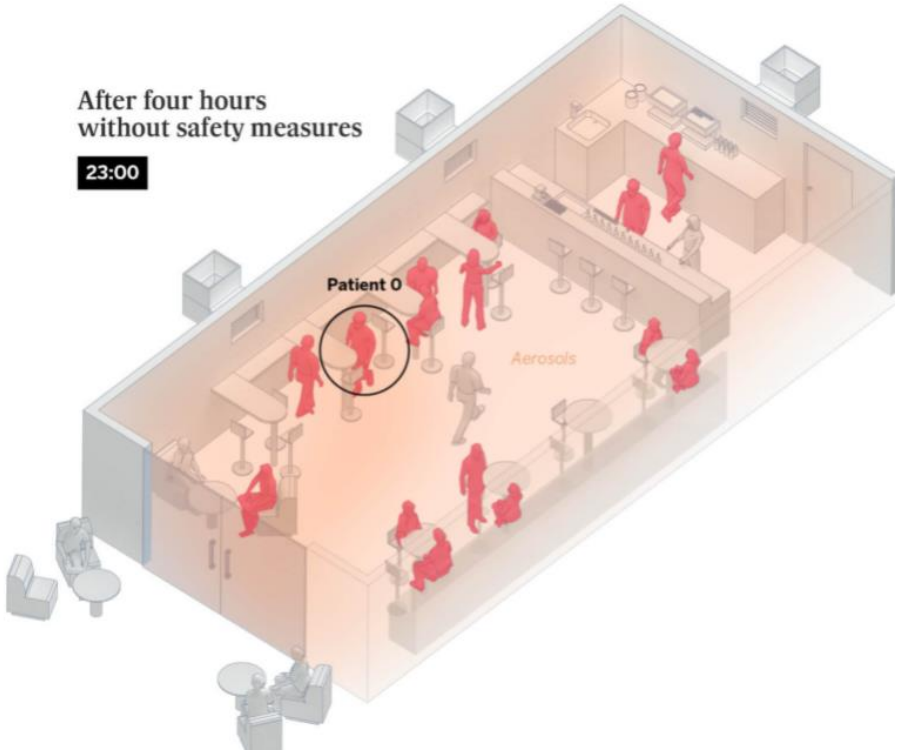
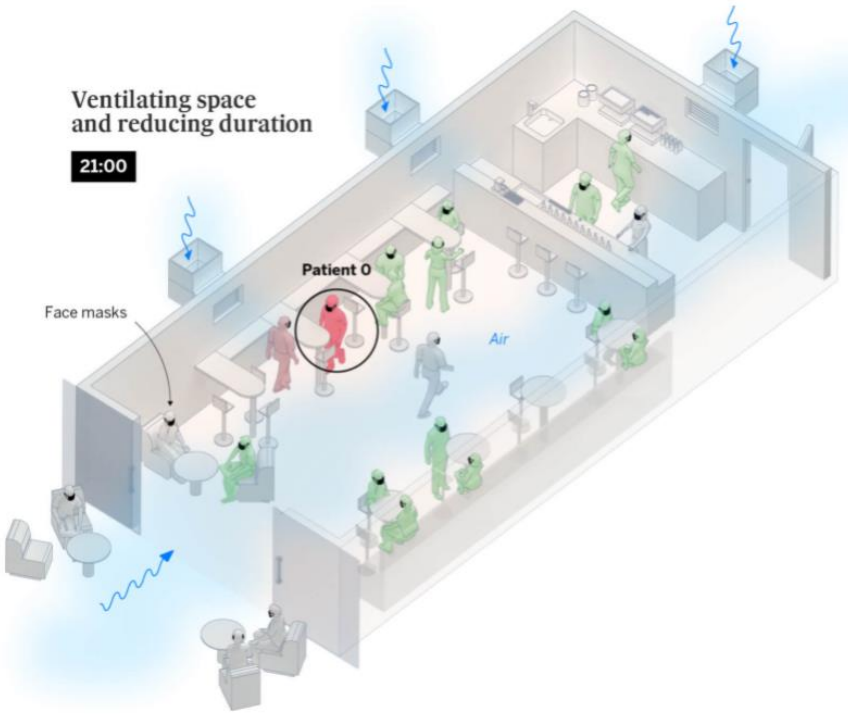
1. Introduction COVID19 - Ventilation







https://www.bbc.com/news/world-53329946

https://english.elpais.com/society/2020-10-28/a-room-a-bar-and-a-class-how-the-coronavirus-is-spread-through-the-air.html

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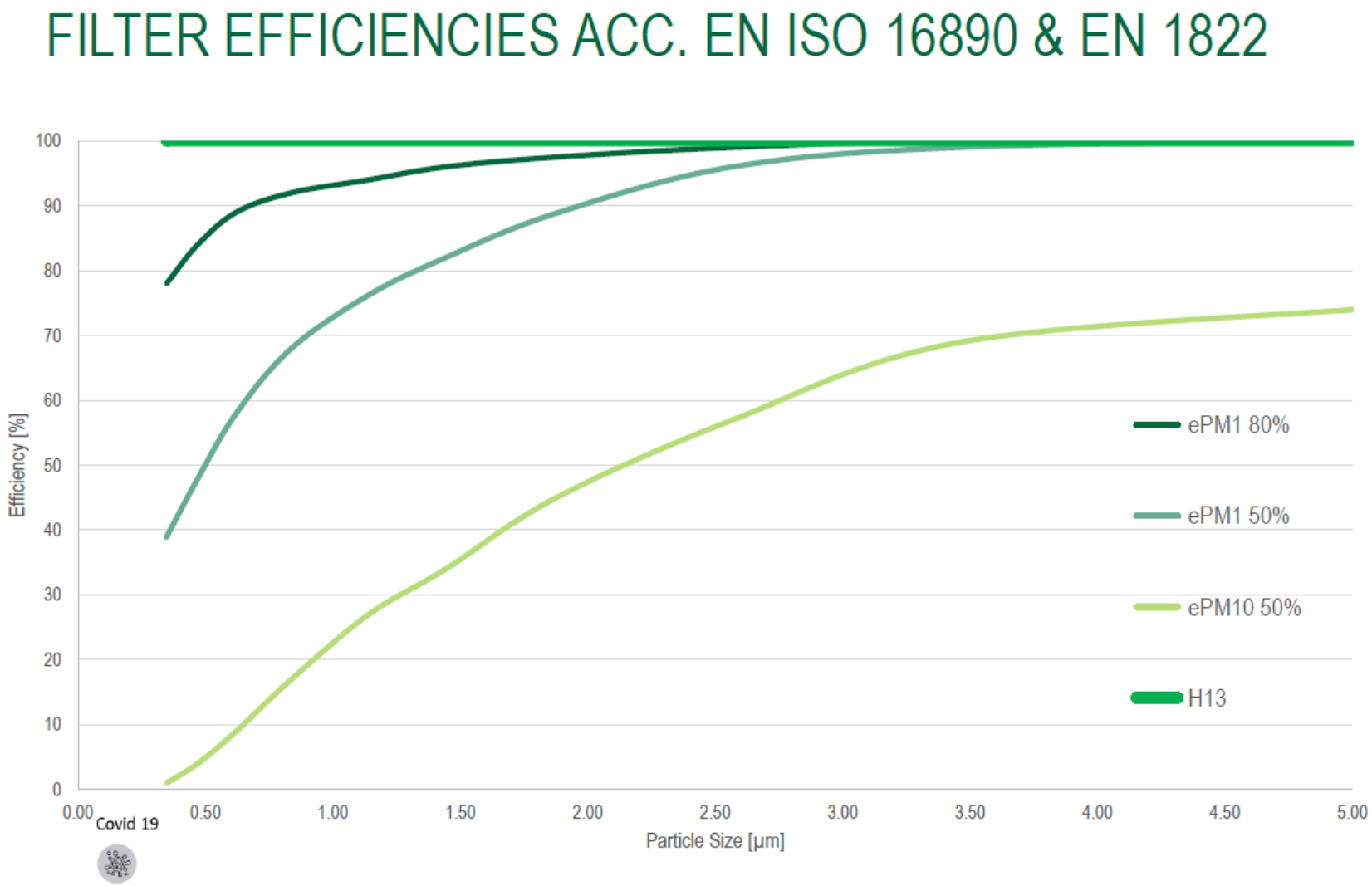
1. Introduction COVID19 - Ventilation



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2. How to optimize Indoor Air Quality with air filters

1. Optimization Supply Air Filters

2. Optimization Recirculation Air Filters

3. Air Cleaners with HEPA Filters

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2.1 Optimize supply air filters

- REHVA recommends to keep using the normal ISO ePM1 filters in the supply air, as they would provide enough protection in the unlikely event of virus-containing aerosols coming from the outside.*
- Recommended filter classes for the supply air depending on your local outdoor air quality can be found in Eurovent 4/23 and VDI 6022

Outdoor air quality		Supply air quality				
		SUP 1	SUP 2	SUP 3	SUP 4	SUP 5
ODA 1	Example 1	ePM_{10} 50% + ePM_1 60%	ePM_1 50%	$ePM_{2,5}$ 50%	ePM_{10} 50%	ePM_{10} 50%
	Example 2	ePM_1 70%	-	-	-	-
ODA 2	Example 1	ePM_1 50% + ePM_1 60%	ePM_{10} 50% + ePM_1 60%	ePM_1 50%	$ePM_{2,5}$ 50%	ePM_{10} 50%
	Example 2	ePM_1 80%	ePM_1 70%	$ePM_{2,5}$ 70%	ePM_{10} 80%	-
ODA 3	Example 1	ePM_1 50% + ePM_1 80%	ePM_1 50% + ePM_1 60%	ePM_{10} 50% + ePM_1 60%	ePM_1 50%	$ePM_{2,5}$ 50%
	Example 2	ePM_1 90%	ePM_1 80%	$ePM_{2,5}$ 80%	ePM_{10} 90%	ePM_{10} 80%

Table 7: examples of filter classes meeting respective ODA/SUP categories requirements

office in a big city

*REHVA COVID-19 Guidance Document, August 3, 2020

REHVA
Federation of European Heating, Ventilation and Air Conditioning Associations

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2.2 Optimize recirculating air filters

- REHVA recommends to turn off the recirculation air completely. If that is not possible, it is recommended to filter it with HEPA filters or at least with air filters ISO ePM1 80%.*

- SOLUTION DELTRIAN NWES98PLUS : ePM1 90% + virucide

LUXEMBOURG INSTITUTE OF SCIENCE AND TECHNOLOGY | LIST

Date: 14.12.2020

Concerns: Analytical work for Molecular Plasma Group concerning decontamination process using their technology; use of MS2 as a meaningful surrogate for enveloped viruses such as SARS-CoV-2

To whom it may concern,

We have performed analytical work for MPG as documented in our Test Report MPG2020.11.09, where MS2 bacteriophage has been used as a meaningful surrogate for SARS-Cov-2 virus. It is considered to be more resistant to the environment conditions or decontamination treatment compared to SARS-CoV-2.

This means that the decontamination rates observed with MS2 bacteriophages must be seen as a minima values and that it is most probable that SARS-CoV-2 is decontaminated as higher rates.

Best Regard,

Dr Henry-Michel CAUCHIE

Head of Environmental Microbiology and Biotechnology
LIST, Environmental Research and Innovation Department

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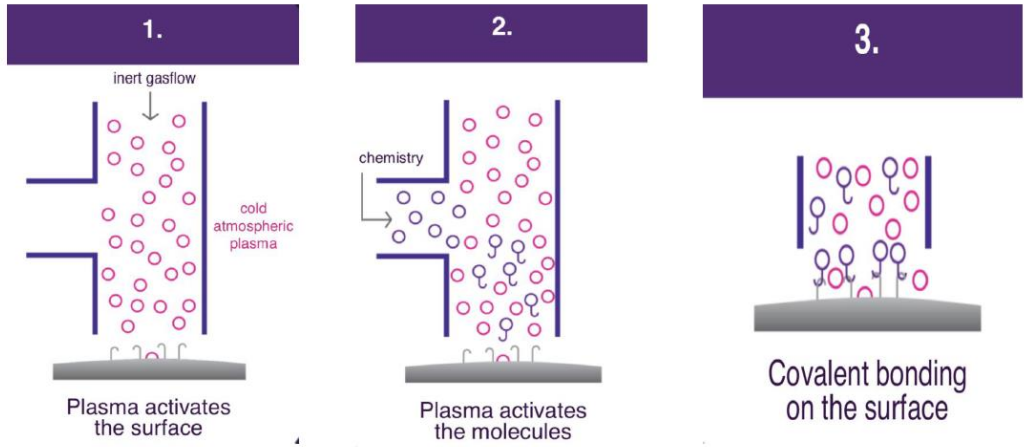
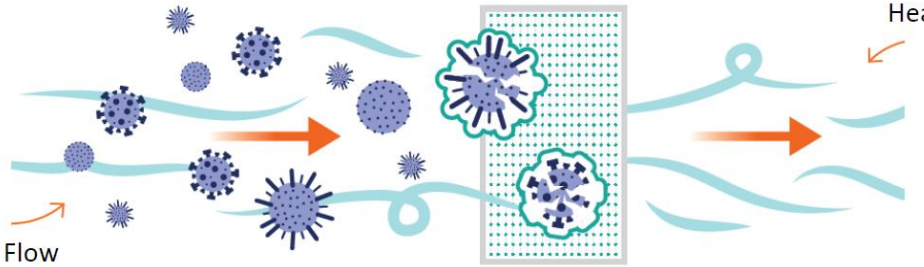
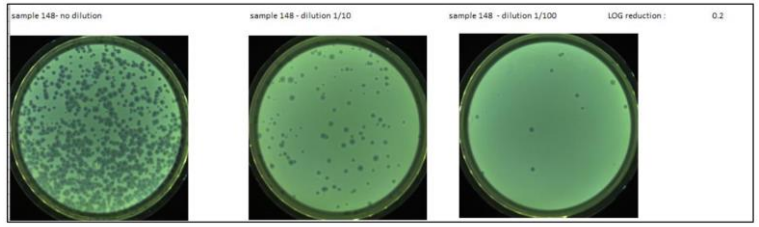
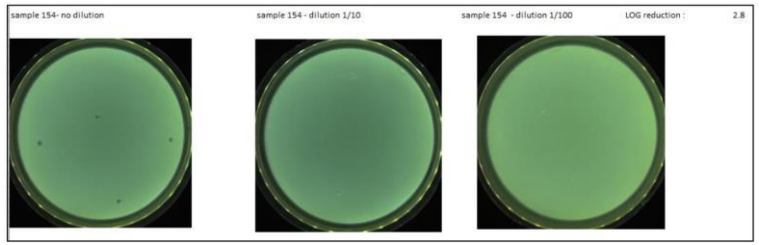




Contaminated Air Flow



Example of a good Virucidal Effect Thus High log reduction:



Healthy Air

*REHVA COVID-19 Guidance Document, August 3, 2020

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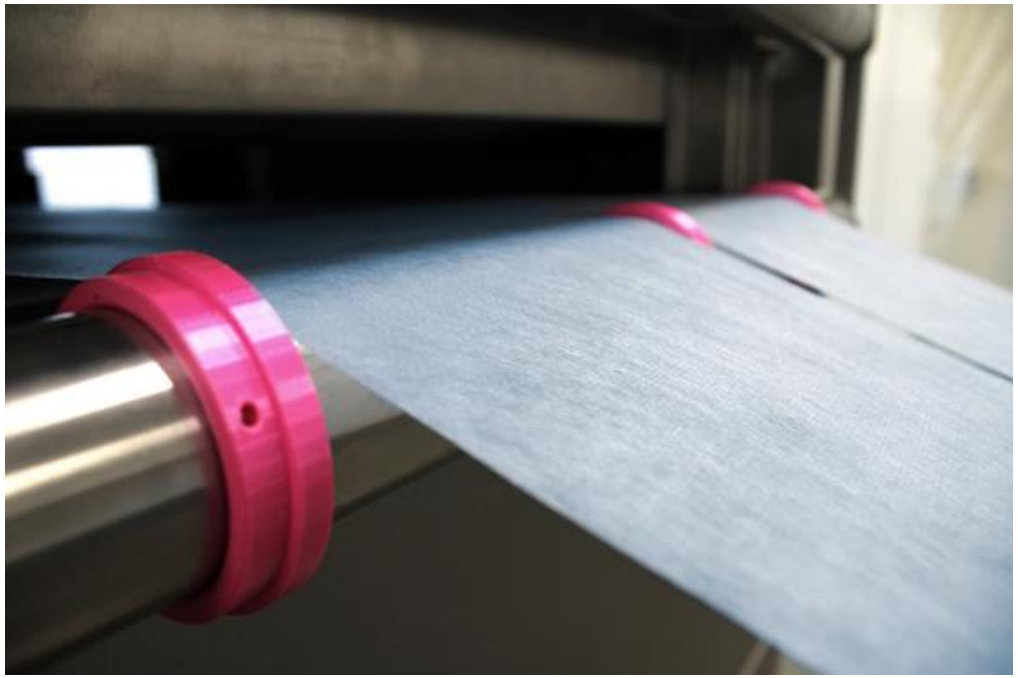
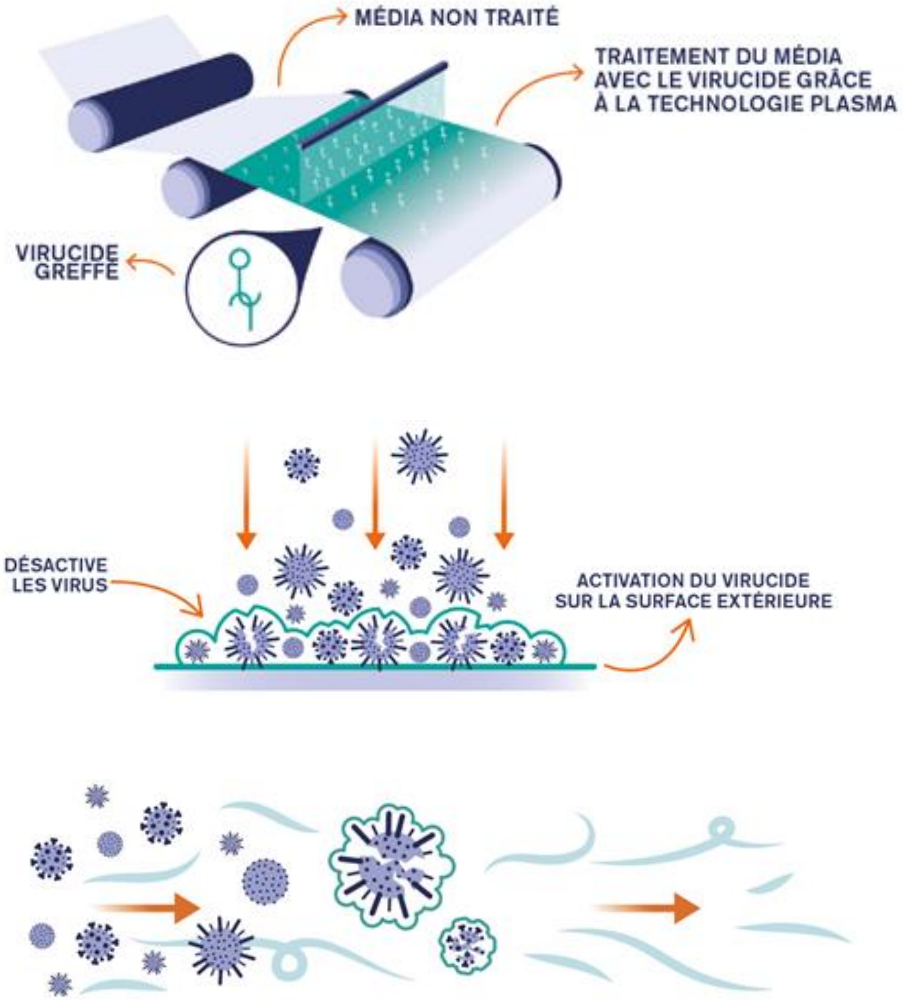
2.2 Solution Deltrian NWES98PLUS +

A new process applicable to filters to reduce the spread of viruses.

This shield consists of a plasma grafting of the sterilizing virucide.
Viruses, including COVID 19, are 99% neutralized within 10 minutes.
The treated surface of the filter activates on contact with droplets that carry viruses. After the contact time, the viruses are deactivated and are no longer infectious.





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2.2 Solution Deltrian NWES98PLUS +

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2.2 Solution Deltrian NWES98PLUS +

A solution that helps to reduce energy consumption

DEVICE TESTED

Model:	NWES98PLUS-6/400/11	Manufacturer:	
Type of media:	SYNTH	Construction:	11 Pockets
Net filtering area:	13 m²	Filter dimensions (width x height x depth):	
Bar press Dp	999.1 hPa p kg/m³	1.17	
Bar press dust	1003.5 hPa p kg/m³	1.18	592 592 400

TEST DATA AND ATTACHED TEST ID NUMBERS

	Dust	Dp
Test air flow rate:	0.945m³/s	0.945m³/s
Temperature:	22°C	25°C
Rel. humidity:	41%	28%
Test aerosol:	DEHS, KCl	

Test ISO 16890-2:	006906 003885 003906
Test ISO 16890-3:	006906 006907
Test ISO 16890-4:	006906 003899 003904
Loading dust:	ISO A2 FINE

RESULTS

Initial pressure differential:	98Pa
Average pressure drop :	104Pa
Initial grav. arrestance:	99%

Final pressure differential:			301Pa
Fan R. :	0.50	Energy :	1198 kWh
Test dust capacity:			719g

Efficiency values :	$e\,PM_1$:	93.0%	
Min. efficiencies :	$e_{min}PM_1$:	92%	

$e\,PM_{2.5}$:	95.0%	$e\,PM_{10}$:	98.0%
$e_{min}PM_{2.5}$:	94%		

ISO rating:	**ISO ePM 1 : 90 %**	**ISO ePM 2,5 : 95 %**

ISO ePM 10 : 95 %

Advantages

- 23% Energy savings compared to market average
- Strong and airtight frame
- Hygienic product acc. to VDI6022 and ISO846
- Free of BPA, Formaldehyde, Phthalates
- Optimizing waste management: compact, lightweight and fully incinerable
- Lowest weight in the industry
- Food contact approved acc. to EC1935/2004
- Tested resistance against disinfectant and cleaning procedures
- Optimized for Bag-in Bag-out safe change*
- Machine-tested leak-free construction

Application: High Airflow filter for make-up air and exhaust air applications
Type: V-Bank Box Filter
Frame: ABS
Gasket: Seamless PU-foam gasket
Media: Glass fiber
Separator: Hot Melt
Sealant: Polyurethane
EN 1822 (Efficiency @ MPPS): E10 (≥85%), E11 (≥95%), E12 (≥99,5%), H13 (≥99,95%), H14 (≥99,995%)
Rec. final pressure drop: 2x Initial pressure drop
Max. final pressure drop: 600 Pa
Temperature max: 70°C
RH. max: 100%
Mounting/Frames: FKB, 4N, CamCube, CamBox, CamSafe
Remarks: Compliant with Prosafe** requirements

Art. No.	Model Name	EN1822	Dimensions WxHxD (mm)	Air Flow (m³/h)	Pressure Drop (Pa)***	Media Area (m²)	Weight (kg)
ABV3022131001	VGXL10-610x305x292-P-PS	E10	610x305x292	1500/1800	150/190	10,9	4,9
ABV6022121001	VGXL10-610x610x292-P-PS	E10	610x610x292	3400/4000	150/190	22,0	7,7
ABV3032131001	VGXXL10-610x305x292-P-PS	E10	610x305x292	2300	210	14,9	5,3
ABV6032121001	VGXXL10-610x610x292-P-PS	E10	610x610x292	5000	210	30,2	8,5
ABV3122131001	VGXL11-610x305x292-P-PS	E11	610x305x292	1500/1800	170/210	18,9	5,7
ABV6122121001	VGXL11-610x610x292-P-PS	E11	610x610x292	3400/4000	170/210	38,3	9,3
ABV3222131001	VGXL12-610x305x292-P-PS	E12	610x305x292	1500/1800	180/220	18,9	5,7
ABV6222121001	VGXL12-610x610x292-P-PS	E12	610x610x292	3400/4000	180/220	38,3	9,3
ABV3322131001	VGXL13-610x305x292-P-PS	H13	610x305x292	1500/1800	200/240	20,5	5,8
ABV6322121001	VGXL13-610x610x292-P-PS	H13	610x610x292	3400/4000	200/240	41,6	9,6
ABV3332131001	VGXXL13-610x305x292-P-PS	H13	610x305x292	2300	400	20,5	5,8
ABV6332121001	VGXXL13-610x610x292-P-PS	H13	610x610x292	5000	400	41,6	9,6
ABV3422131001	VGXL14-610x305x292-P-PS	H14	610x305x292	1500	250	20,5	5,8
ABV6422121001	VGXL14-610x610x292-P-PS	H14	610x610x292	3400	250	41,6	9,6
ABV3432131001	VGXXL14-610x305x292-P-PS	H14	610x305x292	1800	310	20,5	5,8
ABV6432121001	VGXXL14-610x610x292-P-PS	H14	610x610x292	4000	310	41,6	9,6

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2.2 Solution Deltrian NWES98PLUS +

- ✓ Tested and certified against COVID-19
- ✓ Safe for human and nature (biocide regulation)
- ✓ Tested (rapid aging test) for lifetime virucide function: guarantee function of one year (12 months)
- ✓ Normal (low) pressure drop vs HEPA filter
- ✓ Energy efficiency A+
- ✓ High dust holding capacity (nanowave) , no need for prefilter stage
- ✓ Pocket filter can be tailor made to any dimension (W x H) for special sizes
- ✓ Short lead time (2-3 weeks)
- ✓ Low investment for 12 months COVID-SAFE ventilation system
- ✓ IP Patented

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Merci !