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ISO 16890 - THE GLOBAL AIR FILTRATION STANDARD

Meeting your energy efficiency and IAQ requirements

09 JUNE 2021

10:00H (GST) | 11:30H (IST) | 14:00H (SST)

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Moderator

Markus Lattner

Managing Director, Eurovent Middle East

International Director, Eurovent

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KEY PERSPECTIVES ON THE REGION'S HVACR INDUSTRY

Technicalities

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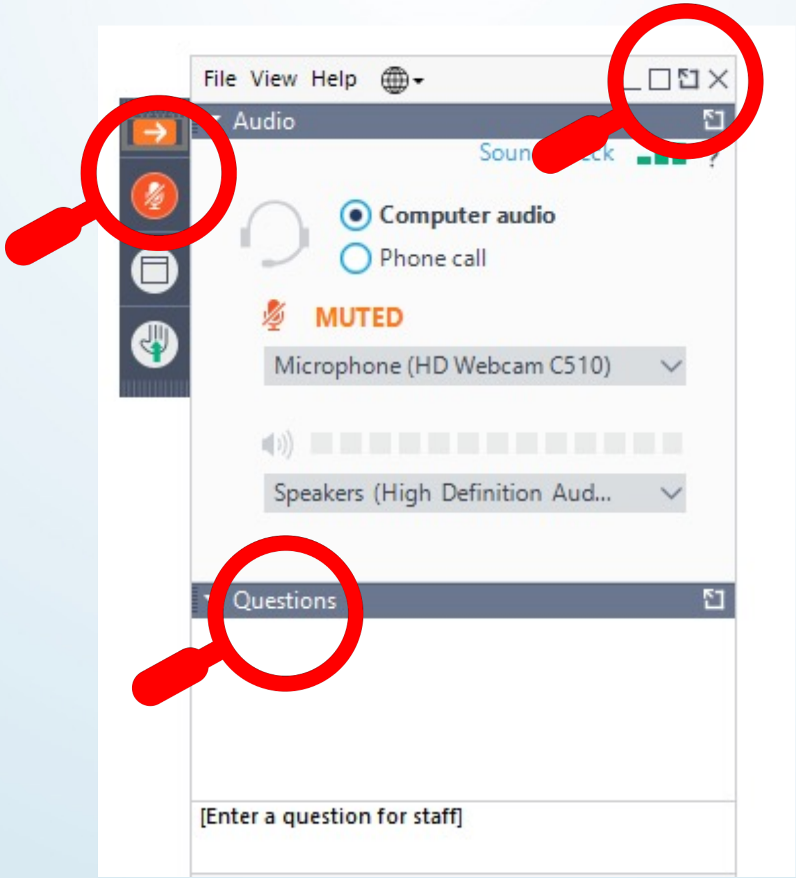

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Handouts

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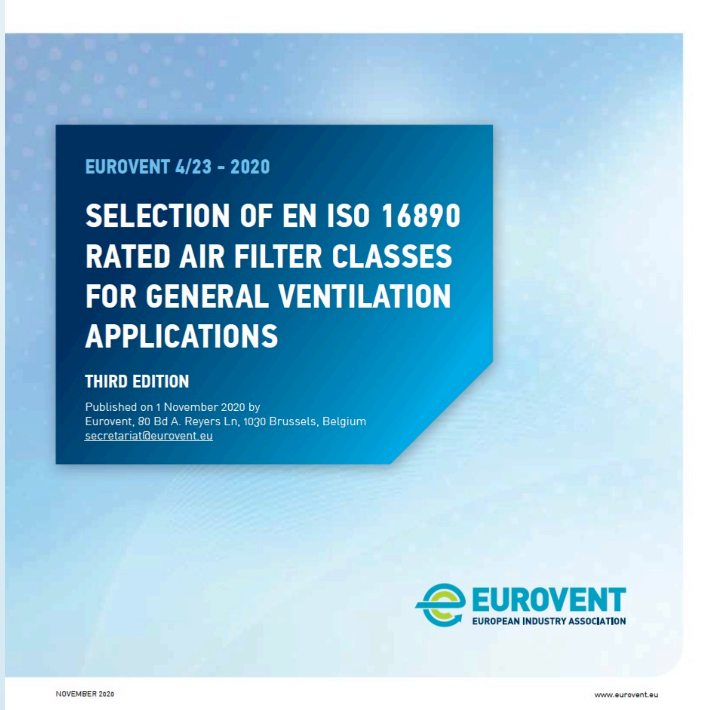
Eurovent Air Filters Guidebook

Eurovent Recommendation 4/23



Roadmap

1. **Welcome remarks and introduction**
2. ISO 16890: The global air filtration standard
3. Eurovent 4/23: Guidance to the application of ISO 16890
4. Energy efficiency and filter certification
5. Summary of key takeaways
6. Panel discussion and Q&A

Speakers

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Prabhat PK Goel
Technical and Industry Advisor, Eurovent Certita Certification
Lecturer at ISHRAE Institute of Excellence

Dr. Marc Schmidt
Vice President Technologies Europe, AAF
Chairman of the Eurovent Product Group ‘Air Filters’

Sylvain Courtey
Technical Director, Eurovent Certita Certification

Vanshaj Kaul
Country Representative India, Eurovent Certita Certification
Public Policy professional

Guest panellist

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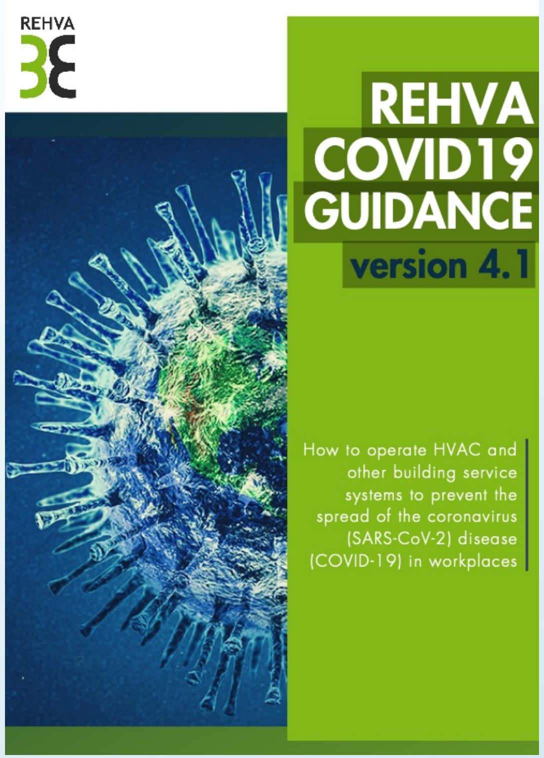
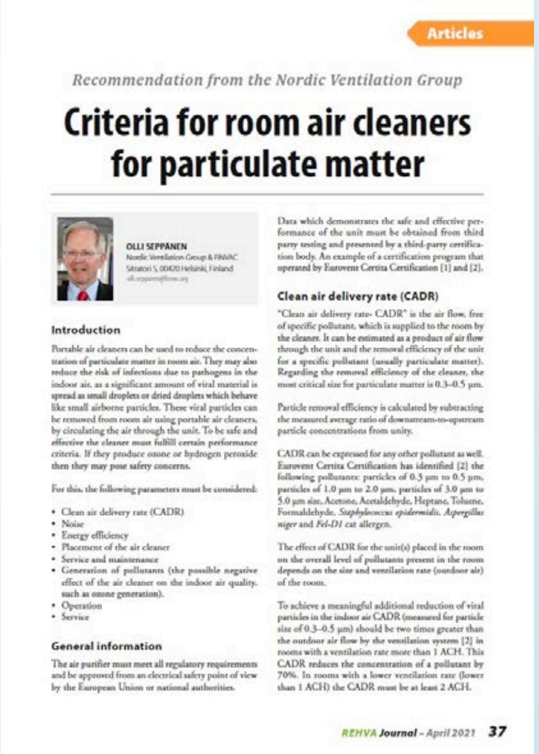
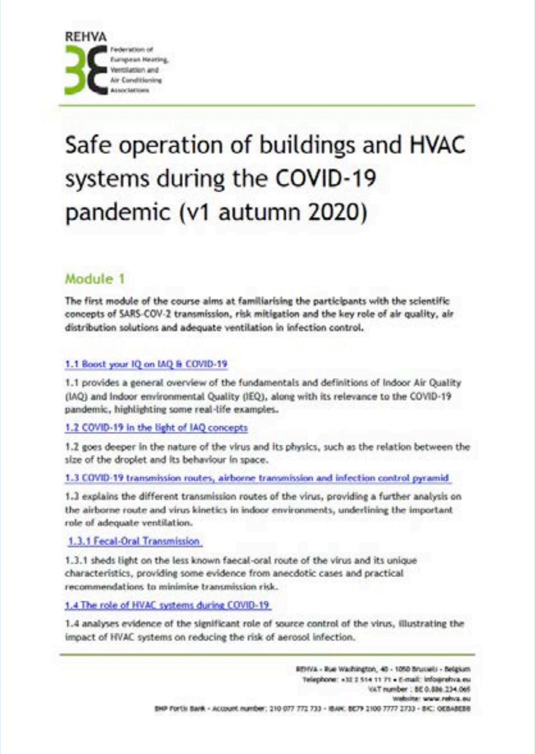
Ilinca Nastase
Associate Professor, Director of the Doctorate School, UTCB
Co-Chair of Technology and Research Committee, REHVA







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ISO 16890:
The global air filtration standard

Prabhat PK Goel

Technical and Industry Advisor, Eurovent Certita Certification

Lecturer at ISHRAE Institute of Excellence

Background

ISO International Organization for Standardization

World Health Organization

EPA United States Environmental Protection Agency

FETA Federation of Environmental Trade Associations

BIS IS 7613 : 1975(R2017)

METHOD OF TESTING PANEL TYPE AIR FILTERS FOR AIR CONDITIONING AND VENTILATION PURPOSES

Published date: 12-01-2013

Publisher: Bureau of Indian Standards

NAFA® National Air Filtration Association

Basics

Let's first understand some basics

ISO 16890-1:2016

What is it all about?

And why is it so necessary to change!

Reasons for global preference for ISO 16890

Greater emphasis on Indoor Air Quality

- **New medical findings**
- **Particulate matter**
- **Fine dust**

- New medical findings – Different approach to testing and classification
- Issued by ISO to improve IAQ with fine particulate matter
- Increased focus on 1 & 2.5 Microns particle size effects
- Comprehensive test procedure and classification method

Led to change in approach to 'Method of Air Filter Testing'

Reasons for global preference for ISO 16890

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Greater emphasis on what we breathe

- **New Medical Findings**

ISO International Organization for Standardization

World Health Organization

- Cardiovascular issues due to small particles
- Effect on nervous system due to small fine dust
- ISO standard take notice of this
- New regulations by WHO in keeping with Standards

Reasons for global preference for ISO 16890

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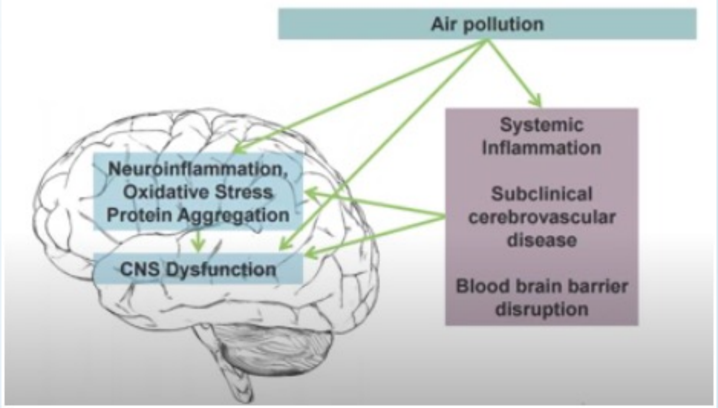
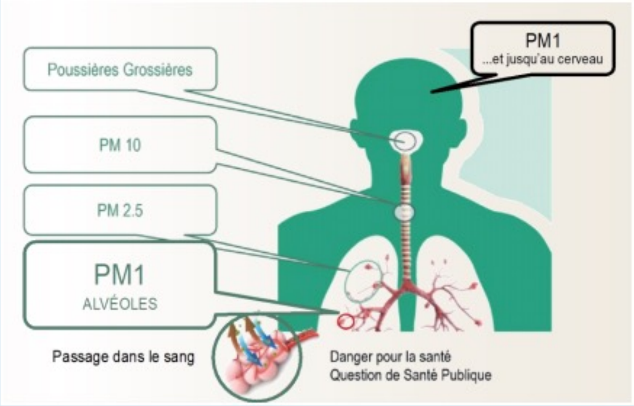
Greater emphasis on Indoor Air Quality

World Health Organization





PM_{10}	$PM_{2.5}$	PM_1
Particles 10 µm in diameter or smaller can reach the respiratory ducts and potentially cause decreased lung function.	**Particles 2,5 µm** in diameter or smaller can penetrate the lungs and cause decreased lung function, skin and eye problems.	**Particles 1 µm** in diameter or smaller are most dangerous. They are tiny enough to enter the bloodstream and lead to cancer, cardiovascular diseases and dementia.

Most parameters now related to PM1, PM2.5, PM10

Deconstructing the nomenclature

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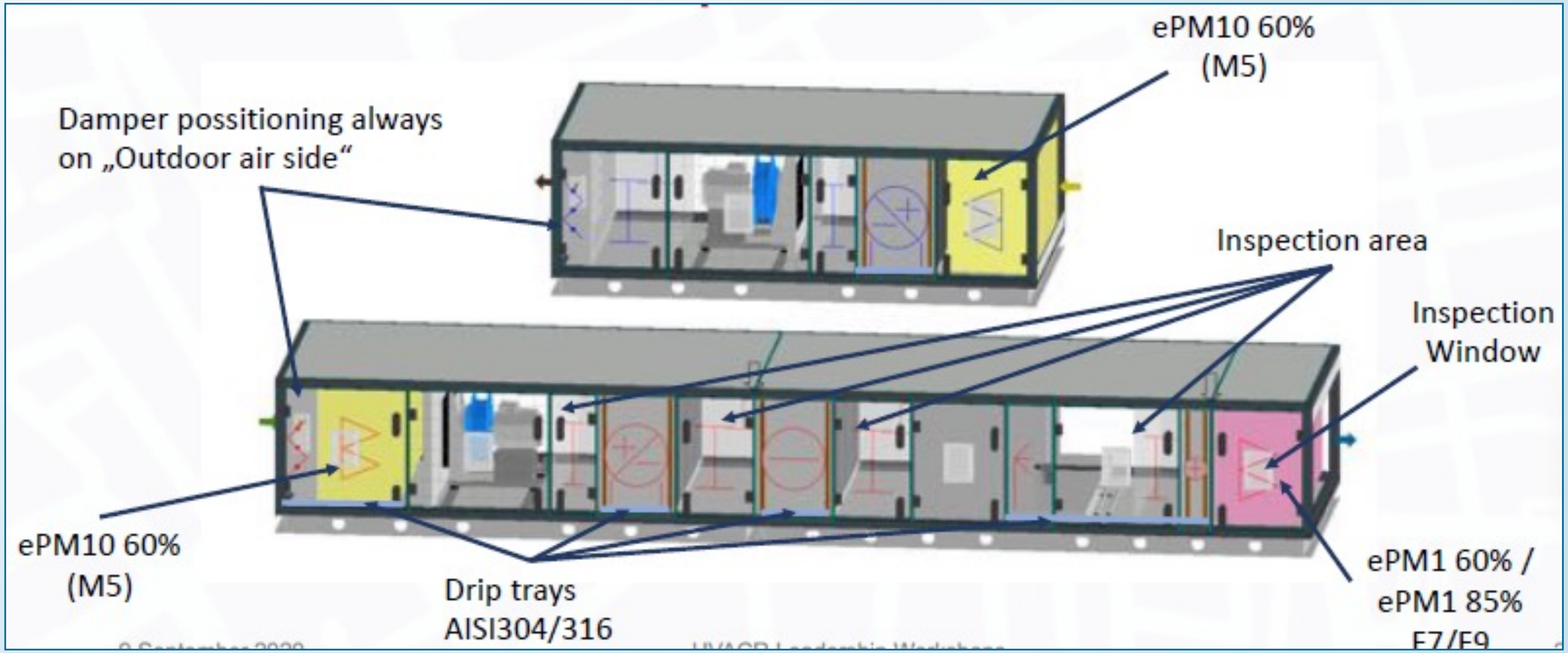
Filter nomenclature example - ePMxx vv%



MERV filter ratings ASHRAE 52.1 & 52.2

Understanding how air filters work

The MERV (Minimum Efficiency Reporting Value) rating of a filter describes the size of the holes in the filter that allow air to pass through. The higher the Merv rating, the smaller the holes in the filter, the higher the efficiency.

ASHRAE in the process of modifications based on particle size

Reference: PDF MERV FILTER TESTING EXPLAINED

Reasons for global preference for ISO 16890

Most IAQ standards now relate to PM1, PM2.5 and PM10 and their removal requirement

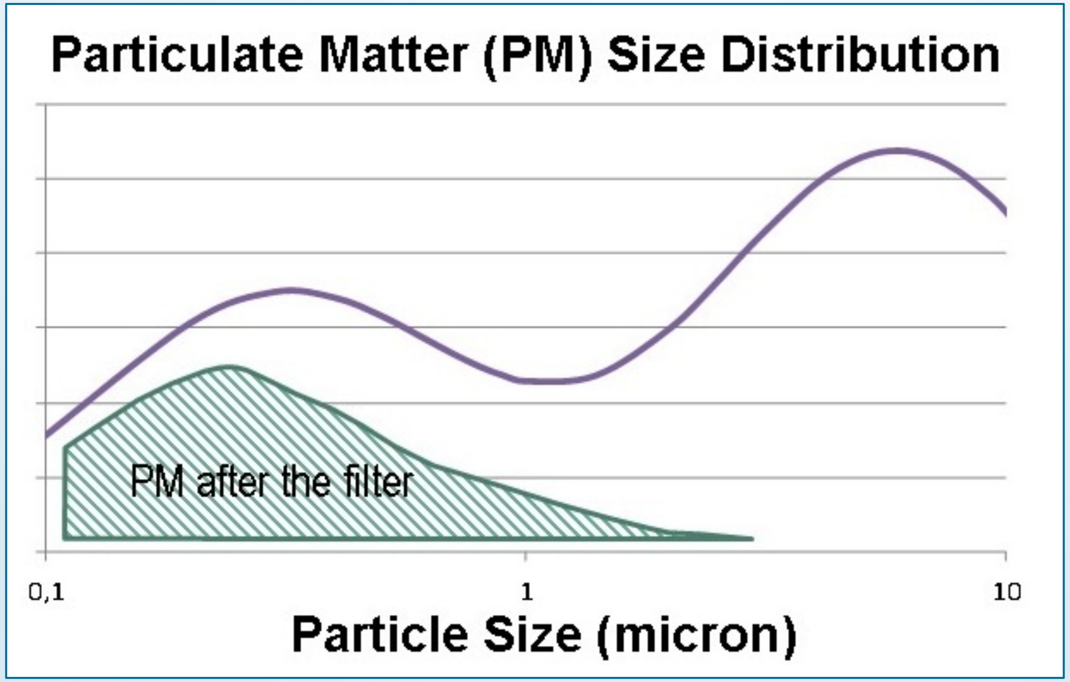


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Table 5 Threshold values for indoor air quality parameters

Parameters		Units	Classification: Class A	Class B	Class C
Basic IAQ parameters	CO_2	ppm	Ambient + 350	Ambient + 500	Ambient + 700
	PM 2.5	µg/m³	<15	<25	<25
	CO	ppm	<2	<9	< 9
	TVOC (equivalent to isobutylene)	µg/m³	<200	<400	<500
Complementary IAQ parameters	PM 10	µg/m³	<50	<100	<100
	CH_2O	µg/m³	<30	<100	-
	SO_2	µg/m³	<40	<80	-
	NO_2	µg/m³	<40	<80	-
	O_3	µg/m³	<50	<100	-
	Total Microbial Count	CFU/m³	Indoor ≤ ambient	Indoor ≤ ambient	-
Occupant Satisfaction		%	90	80	-

ISHRAE IAQ Standard

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Meeting your energy efficiency and IAQ requirements

- Provide guidelines on the selection of EN ISO 16890 rated air filter classes
- Outline differences between EN 779 and EN ISO 16890
- Increase awareness on the energy efficiency of air filters

How to recommend the correct fresh air filter

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Outdoor Air Quality – Eurovent Recommendation 4/23

Category	Description	Typical environment
ODA 1	OUTDOOR AIR, WHICH MAY BE ONLY TEMPORARILY DUSTY Applies where the World Health Organisation WHO (2005) guidelines are fulfilled (annual mean for $PM_{2,5} \leq 10$ µg/m^3 and $PM_{10} \leq 20$ µg/m^3).	
ODA 2	OUTDOOR AIR WITH HIGH CONCENTRATIONS OF PARTICULATE MATTER Applies where PM concentrations exceed the WHO guidelines by a factor of up to 1,5 (annual mean for $PM_{2,5} \leq 15$ µg/m^3 and $PM_{10} \leq 30$ µg/m^3).	
ODA 3	OUTDOOR AIR WITH VERY HIGH CONCENTRATIONS OF PARTICULATE MATTER Applies where PM concentrations exceed the WHO guidelines by a factor of greater than 1,5 (annual mean for $PM_{2,5} > 15$ µg/m^3 and $PM_{10} > 30$ µg/m^3).	

How to recommend the correct fresh air filter

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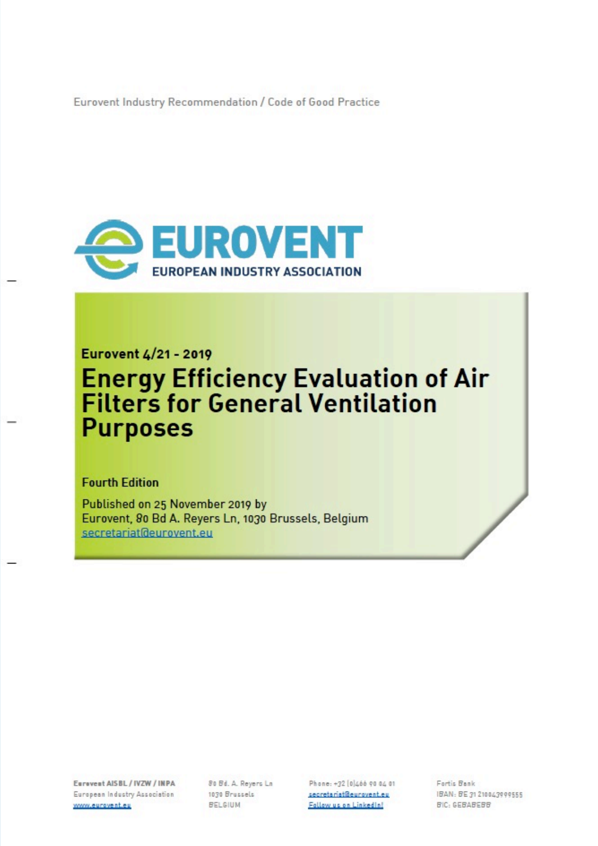
Indoor Air Quality – Eurovent Recommendation 4/23

SUP 2	**Rooms for permanent occupation.** Examples: Kindergardens, offices, hotels, residential buildings, meeting rooms, exhibition halls, conference halls, theaters, cinemas, concert halls.
SUP 3	**Rooms with temporary occupation.** Examples: Storage, shopping centers, washing rooms, server rooms, copier rooms.
SUP 4	**Rooms with short-term occupation.** Examples: restrooms, storage rooms stairways.
SUP 5	**Rooms without occupation.** Examples: Garbage room, data centers, underground car parks.

SUP 1	**Applications with high hygienic demands.** Examples: Hospitals, pharmaceutics, electronic and optical industry, supply air to clean rooms.
SUP 2	**Applications with medium hygienic demands.** Examples: Food and beverage production.
SUP 3	**Applications with basic hygienic demands.** Examples: Food and beverages production with a basic hygienic demand.
SUP 4	**Applications without hygienic demands.** Examples: General production areas in the automotive industry.

Energy evaluation of air filters


Eurovent Industry Recommendation / Code of Good Practice

Eurovent 4/21 - 2019

Energy Efficiency Evaluation of Air Filters for General Ventilation Purposes

Fourth Edition

Published on 25 November 2019 by
Eurovent, 80 Bd A. Reyers Ln, 1030 Brussels, Belgium
secretariat@eurovent.eu

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- Define energy efficiency of air filters for general ventilation purposes
- Define energy efficiency evaluation methods
- Implement the ISO 16890 classification and testing methods in place of EN 779

Replacement of old filters

There is no equivalence between EN 779 & ISO filters - Quick guide for replacement

First determine from application your critical particle size

EN 779: 2012	EN ISO 16890 – range of actual measured average efficiencies		
Filter class	ePM_1	$ePM_{2.5}$	ePM_{10}
M5	5% - 35%	10% - 45%	40% - 70%
M6	10% - 40%	20% - 50%	60% - 80%
F7	40% - 65%	65% - 75%	80% - 90%
F8	65% - 90%	75% - 95%	90% - 100%
F9	80% - 90%	85% - 95%	90% - 100%

Pressemitteilung der Expertengruppe

Filterklasse nach EN 779	Filterklasse nach ISO 16890	Abscheide-leistung
M5	ISO ePM10	≥ 50 %
F7	ISO ePM2.5	≥ 65 %
oder:	ISO ePM1	≥ 50 %
F9	ISO ePM1	≥ 80 %

Empfehlung der Expertenarbeitsgruppe Luftfiltration zu Anforderungen an die neuen Luftfilter für Komfort-Raumlüftungsanlagen (Filterklasse nach ISO 16890 verglichen mit Filterklasse nach EN 779). In der letzten Filterstufe muss mindestens ein Filter ISO ePM1 ≥ 50 % eingesetzt werden.

Luzern, 27. Januar 4. Schweizer Hygienetagung 19

Programme to help provide desired filtration level

Consulting engineer decides exact requirements



Identification: ECP 11 FIL

Revision 0 – February 2020

(This version cancels and replaces any previous versions)

Approbation date: 10/02/2020

Comes into effect from: 10/02/2020



Areas with good filtration requirement

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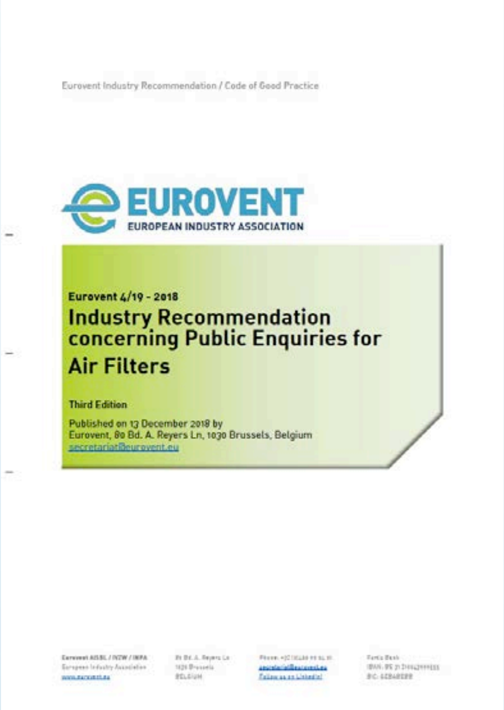
Guidance

Programme to help provide desired filtration level



Conclusion

- The WHO findings bring out the importance of fine dust and the medical findings associated with fine dust particles. The ISO 16890 takes this into consideration.
- ISO and WHO findings are based on PM1, PM2.5 and PM10. Environmental and IAQ standards globally refer to PM1, PM2.5 and PM10.
- Filter nomenclature needs to be easy to understand by all involved with IAQ and airside HVAC. Filter nomenclature should relate to particle size and the removal efficiency of the filter.
- With the addition of Eurovent Guidebooks and Recommendations, the programme becomes more holistic and enables engineers to select the correct filters for maintaining desired IAQ levels with data on energy spent annually to achieve the required IAQ.

Thank you!

Prabhat PK Goel

Technical and Industry Advisor, Eurovent Certita Certification

Lecturer at ISHRAE Institute of Excellence

pkgoel123@hotmail.com

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Eurovent 4/23:
Guidance to the application of ISO 16890

Marc Schmidt, Ph.D.

Vice President Technologies Europe, AAF

Chairman of the Eurovent Product Group 'Air Filters'

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Eurovent Recommendation 4/23

Third edition, November 2020

EUROVENT 4/23 - 2020

SELECTION OF EN ISO 16890 RATED AIR FILTER CLASSES FOR GENERAL VENTILATION APPLICATIONS

THIRD EDITION

Published on 1 November 2020 by
Eurovent, 80 Bd A. Reyers Ln, 1030 Brussels, Belgium
secretariat@eurovent.eu

EUROVENT EUROPEAN INDUSTRY ASSOCIATION

NOVEMBER 2020 www.eurovent.eu

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4 EUROVENT INDUSTRY RECOMMENDATION / CODE OF GOOD PRACTICE

ISO 16890 testing and classification

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Step 1	Filter **efficiency is measured** on 0,3 to 10 µm of the clean not conditioned filter.
Step 2	The **filter is conditioned (discharged)** in an isopropanol vapor atmosphere to eliminate particle filtration based on electrostatic forces.
Step 3	Filter **efficiency is measured again** on 0,3 to 10 µm – now of the conditioned (discharged) filter.
Step 4	Actual **efficiency per PM size is calculated** as the average of the conditioned **and** the unconditioned filter. **Important:** The filter needs to show a minimum efficiency of 50% for the unconditioned **and** the conditioned filter.
Step 5	Values are allocated to ISO groups.
Step 6	**Reporting value is defined. The reporting value for the filter is the highest possible ISO group with at least 50% of efficiency** – always rounded down in 5% steps.

ISO coarse	> 10 µm
ISO ePM_{10}	0,3 µm ≤ x ≤ 10 µm
ISO $ePM_{2,5}$	0,3 µm ≤ x ≤ 2,5 µm
ISO ePM_{1}	0,3 µm ≤ x ≤ 1 µm

Example for filter classification

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A filter is showing following average efficiency values:

Efficiency class	Value
ISO ePM_{10}	89%
ISO $ePM_{2,5}$	63%
ISO ePM_1	49%

- Minimum efficiency of 50% is achieved for **ISO ePM_{10} and ISO $ePM_{2,5}$** – with 49% requirement for **ISO ePM_1 is not fulfilled**
- Highest possible ISO group is therefore **ISO $ePM_{2,5}$**
- **ISO $ePM_{2,5}$ value of 63% is rounded down to 60%**

As a result, the filter is classified as

an ISO $ePM_{2,5}$ 60% filter

Meaning this filter is able to capture 60% of the particles smaller or equal 2,5 micron!

ISO 16890 test duct and discharge chamber

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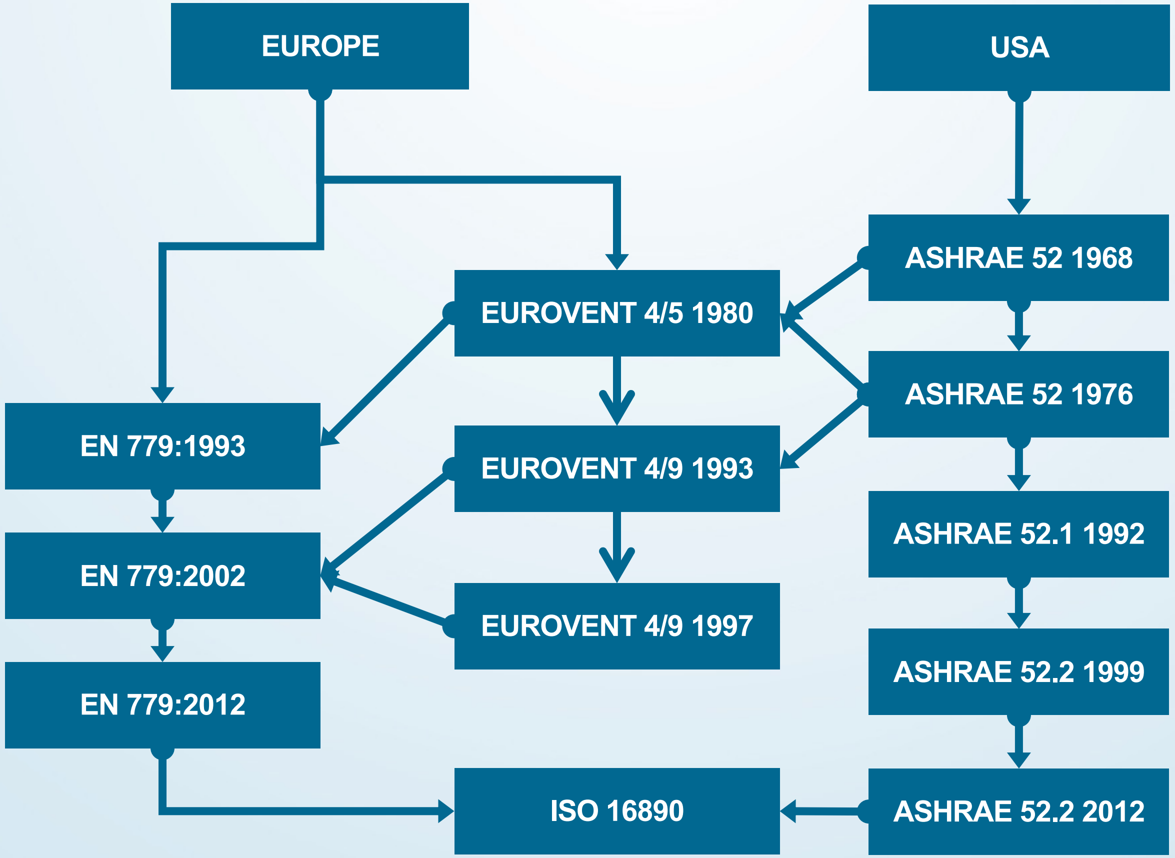
State-of-the-art ISO16890 test duct and discharge chamber in AAF filter lab in Trencin (Slovakia).

History of filter standards



- In 1968, ASHRAE published the first unified standard which measured the arrestance as well as the dust-spot efficiency with artificial test dust.
- In 1976, ASHRAE Standard 52-76 was published introducing the atmospheric dust-spot efficiency.
  - Dust spot efficiency
  - Arrestance
  - Dust holding capacity
- Initial efficiency as function of a particle size (MERV: Minimum Efficiency Reporting Value).
- This standard had many improvements over time. Some of the improvements found in the ANSI/ASHRAE 52.2 standard. The improvement of the 52.2 standard allowed for the 52.1 standard to be retired.

Comparison of filter standards

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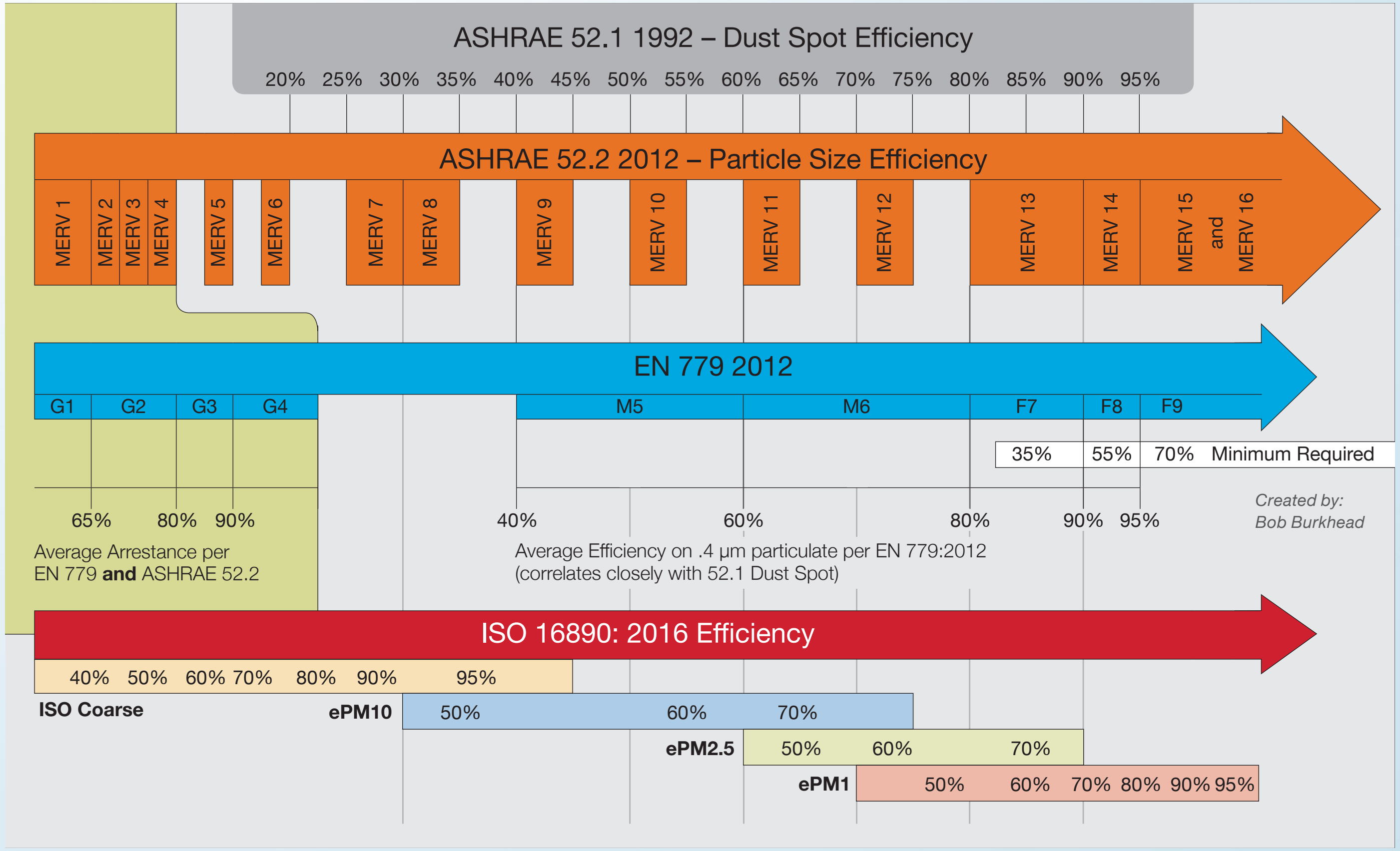
Standard	ASHRAE 52.2:2012	ISO 16890	EN 779:2012
Aerosol	KCl	DEHS/KCL	DEHS
Aerosol Range	0.3 to 10.0 µm	DEHS: 0.3 to 1.0 µm KCL: 1.0 to 10 µm	0.4 µm
Particle sizes for rating	E1: 0.3 – 1.0 µm E2: 1.0 – 3.0 µm E3: 3.0 – 10.0 µm	PM1: 0.3 – 1.0 µm PM2.5: 0.3 – 2.5 µm PM10: 0.3 – 10 µm	0.4 µm
Loading Dust	ASHRAE 52.2 Dust	ISO Fine	ASHRAE 52.2 Dust
Conditioning	Optional: Appendix J (whole filter)	Mandatory: IPA Vapor (whole filter)	Mandatory: IPA Liquid (flat sheet)
Conditioning substance	0.03 µm KCL	IPA Vapor	IPA Liquid
Conditioning Time	Efficiency measured after minimum increments of $6.4x10^7$ particles/cm^3 min. Conditioning stops after no further significant drop in efficiency.	24 h	2 min soak
Classification	MERV 4 – MERV 16	ePM1, ePM2.5, ePM10	G1 – G4, M5 – M6, F7 – F9
Rating	Worst case	Average of initial and discharged condition	Worst case

Correlation – no conversion!



Outdoor Air (ODA) categories

Category	Description	Typical environment
ODA1	**Outdoor air which maybe only temporarily dusty** Applies where the World Health Organization WHO (2005) guidelines are fulfilled: Annual mean for PM2,5 ≤ 10 $\mu g/m^3$ and PM10 ≤ 20 $\mu g/m^3$.	
ODA2	**Oudoor air with high concentrations of particulate matter** Applies where PM concentrations exceed the WHO guidelines by a factor of up to 1,5: Annual mean for PM2,5 ≤ 15 $\mu g/m^3$ and PM10 ≤ 30 $\mu g/m^3$.	
ODA3	**Oudoor air with very high concentrations of particulate matter** Applies where PM concentrations exceed the WHO guidelines by a factor of more than 1,5: Annual mean for PM2,5 > 15 $\mu g/m^3$ and PM10 > 30 $\mu g/m^3$.	

Supply Air (SUP) categories

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Category	Description	General Ventilation	Industrial Ventilation
SUP1	WHO (2005) guidelines limit values **multiplied by a factor x 0,25 (annual mean for PM2.5 ≤ 2.5 µg/m³ and PM10 ≤ 5 µg/m³)**.	-	**Applications with high hygienic demands** Hospitals, pharmaceutics, electronic and optical industry, supply air to clean rooms...
SUP2	WHO (2005) guidelines limit values **multiplied by a factor x 0,5 (annual mean for PM2.5 ≤ 5 µg/m³ and PM10 ≤ 10 µg/m³)**.	**Rooms for permanent occupation** Kindergardens, offices, hotels, residential buildings, meeting rooms, exhibition halls, conference halls, theaters, cinemas, concert halls...	**Applications with medium hygienic demands** Food and beverage production...
SUP3	WHO (2005) guidelines limit values **multiplied by a factor x 0,75 (annual mean for PM2.5 ≤ 7.5 µg/m³ and PM10 ≤ 15 µg/m³)**.	**Rooms with temporary occupation** Storage, shopping centers, washing rooms, server rooms, copier rooms...	**Applications with basic hygienic demands** Food and beverages production with a basic hygienic demand...
SUP4	WHO (2005) guidelines limit values **(annual mean for PM2.5 ≤ 10 µg/m³ and PM10 ≤ 20 µg/m³)**.	**Rooms with short-term occupation** Restrooms, storage rooms stairways...	**Applications without hygienic demands** General production areas in the automotive industry...
SUP5	WHO (2005) guidelines limit values **multiplied by a factor x 1.5 (annual mean for PM2.5 ≤ 15 µg/m³ and PM10 ≤ 30 µg/m³)**.	**Rooms without occupation** Garbage room, underground car parks...	**production areas of the heavy industry** Steel mill, smelters, welding plants...

Selecting filter efficiency

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Better SUP

			Supply Air Quality (SUP)				
			SUP1*	SUP2*	SUP3**	SUP4	SUP5
	Annual mean		PM2.5 ≤ 2.5 µg/m³ PM10 ≤ 5 µg/m³	PM2.5 ≤ 5 µg/m³ PM10 ≤ 10 µg/m³	PM2.5 ≤ 7.5 µg/m³ PM10 ≤ 15 µg/m³	PM2.5 ≤ 10 µg/m³ PM10 ≤ 20 µg/m³	PM2.5 ≤ 15 µg/m³ PM10 ≤ 30 µg/m³
	PM2.5 µg/m3	PM10 µg/m3	ePM1	ePM1	ePM2.5	ePM10	ePM10
Outdoor Air Quality (ODA) ODA1	≤ 10	≤ 20	70%	50%	50%	50%	50%
ODA2	≤ 15	≤ 30	80%	70%	70%	80%	50%
ODA3	> 15	> 30	90%	80%	80%	90%	80%

worse ODA

*min. filtration requirement ePM1 50% at final stage | **min. filtration requirement ePM2.5 50% at final stage

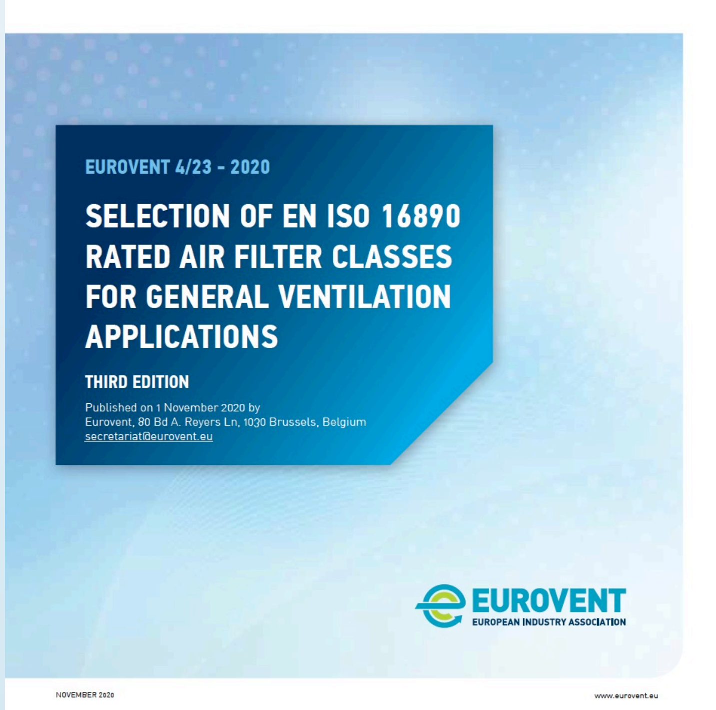
Filter classes meeting recommended minimum efficiency

		SUP1	SUP2	SUP3	SUP4	SUP5
ODA1	2 stages*	ePM10 50% + ePM1 60%	ePM1 50%	ePM2,5 50%	ePM10 50%	ePM10 50%
	1 stage	ePM1 70%	-	-	-	-
ODA2	2 stages*	ePM1 50% + ePM1 60%	ePM10 50% + ePM1 60%	ePM1 50%	ePM2,5 50%	ePM10 50%
	1 stage	ePM1 80%	ePM1 70%	ePM2,5 70%	ePM10 80%	-
ODA3	2 stages*	ePM1 50% + ePM1 80%	ePM1 50% + ePM1 60%	ePM10 50% + ePM1 60%	ePM1 50%	ePM2,5 50%
	1 stage	ePM1 90%	ePM1 80%	ePM2,5 80%	ePM10 90%	ePM10 80%

Handouts

Eurovent Air Filters Guidebook

Eurovent Recommendation 4/23



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Thank you!

Marc Schmidt, Ph.D.

Vice President Technologies Europe, AAF

Chairman of the Eurovent Product Group ‘Air Filters’

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Certification
Energy and filtration efficiency

Sylvain Courtey

Technical Director

Eurovent Certita Certification

Why certification

It is not a question of manufacturers' size, country of origin or brand name

Fair comparision using a standard benchmark

Increase Consumer confidence

Ensures performance before purchase!

- **Eliminates over-sizing due to under performing uncertainty**
- **Eliminates expensive customer Verification tests**
- **Avoids excessive system operating costs**

Building confidence

Filter certification by independent third party*:

- Reduces risk of inefficient and unsafe ventilation system
- Guarantees original design’s energy consumption
- Avoids performance downgrade by maintenance with non-certified spares

Under ISO 17065 Accreditation

Filter and AHU Performance

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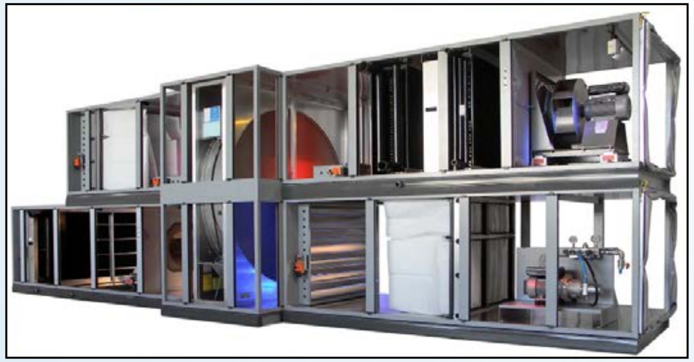
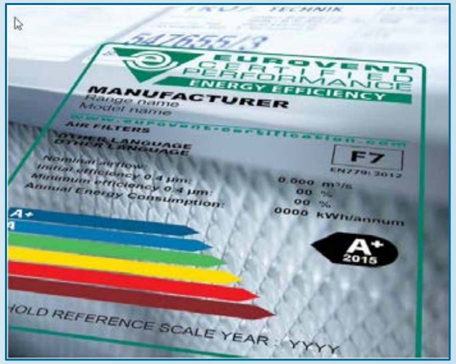
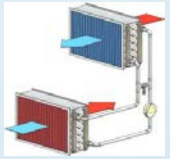


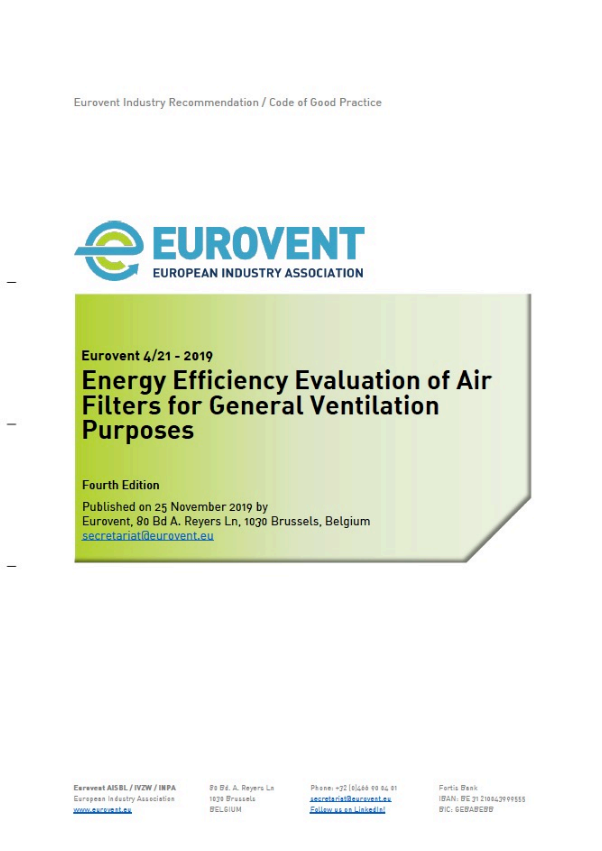


Key milestones for holistic AHU certification

AHU	**1998**
Rotary HE	2004
Plate HE	2005
Filters	**2006**
Run Around Coils	2016
Coils	2016
Ducts	2016
Fans	2017
HYGIENIC ★★★ EUROVENT CERTIFIED PERFORMANCE AIR HANDLING UNITS www.eurovent-certification.com	**2017**
Cooling perf.rating Hot/Humid Climates	2020



Background


Eurovent Industry Recommendation / Code of Good Practice

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Eurovent 4/21 - 2019
Energy Efficiency Evaluation of Air Filters for General Ventilation Purposes

Fourth Edition

Published on 25 November 2019 by
Eurovent, 80 Bd A. Reyers Ln, 1030 Brussels, Belgium
secretariat@eurovent.eu

- Eurovent has been the first organisation in the world to propose a method for rating the energy efficiency of air filters **since 2013**
- **Eurovent 4/21** – Energy Efficiency Evaluation of Air Filters for General Ventilation Purposes (2019) is currently the latest version of the document describing the method
- This method can be used in combination with **ISO 16890**

Principle

- Air filters cause energy consumption (W) due to their pressure drops (Δp)
- Following standard values are considered:
  - Nominal airflow: q_v = 0,944 m^3/s (3400 m^3/h)
  - Operation time: t = 6000 h/a
  - Fan efficiency: η = 0,5

$$W = \frac{q_V \cdot \overline{\Delta p} \cdot t}{\eta \cdot 1000}$$

$$W = 11.33 \frac{\text{kWh/a}}{\text{Pa}} \cdot \overline{\Delta p}$$

Testing method

1. Carry out an ISO 16890-1 test at 0,944 m^3/s for a full size filter (592mm x 592mm)
2. Load the filter with AC fine dust acc. to ISO 16890-3 until the amount of dust defined in the table on the right is reached
3. Calculate the average pressure drop
4. Calculate the yearly energy consumption W

ISO group	Amount of dust fed M_x
ISO ePM_1	200g
ISO $ePM_{2,5}$	250g
ISO ePM_{10}	400g

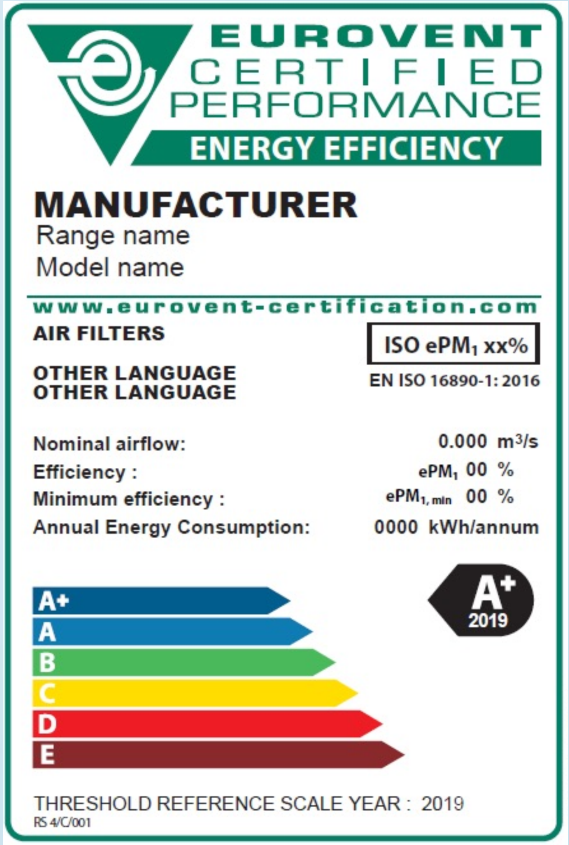
Energy classification

Energy efficiency classes are defined in the Air Filter Technical Certification Rules:

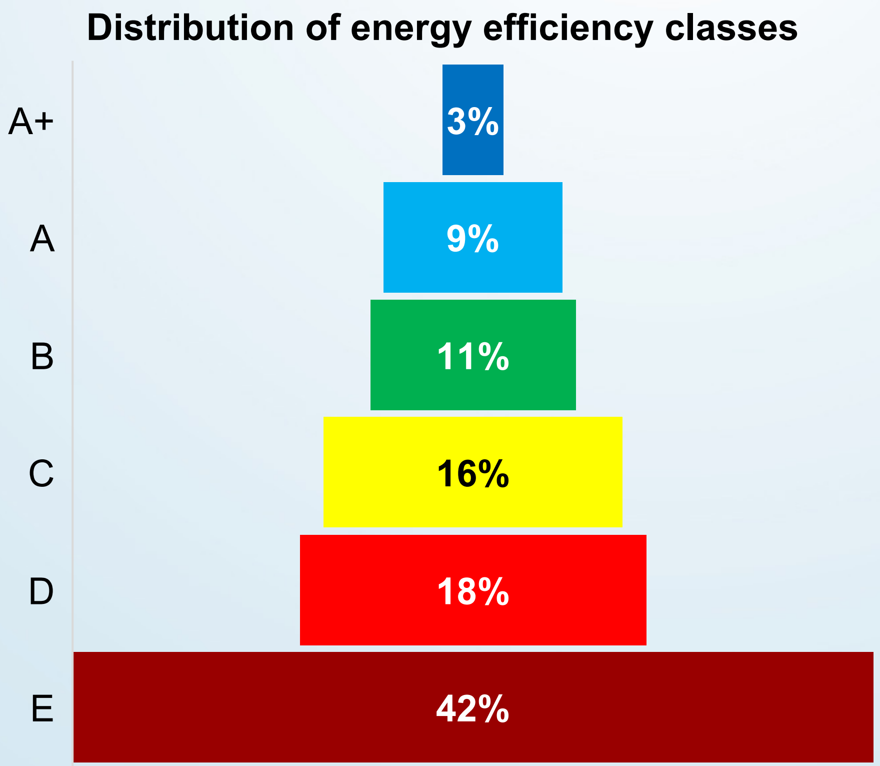
	AEC in kWh/y for ePM1					
	A+	A	B	C	D	E
50 & 55%	800	900	1050	1400	2000	>2000
60 & 65%	850	950	1100	1450	2050	>2050
70 & 75%	950	1100	1250	1550	2150	>2150
80 & 85%	1050	1250	1450	1800	2400	>2400
> 90%	1200	1400	1550	1900	2500	>2500

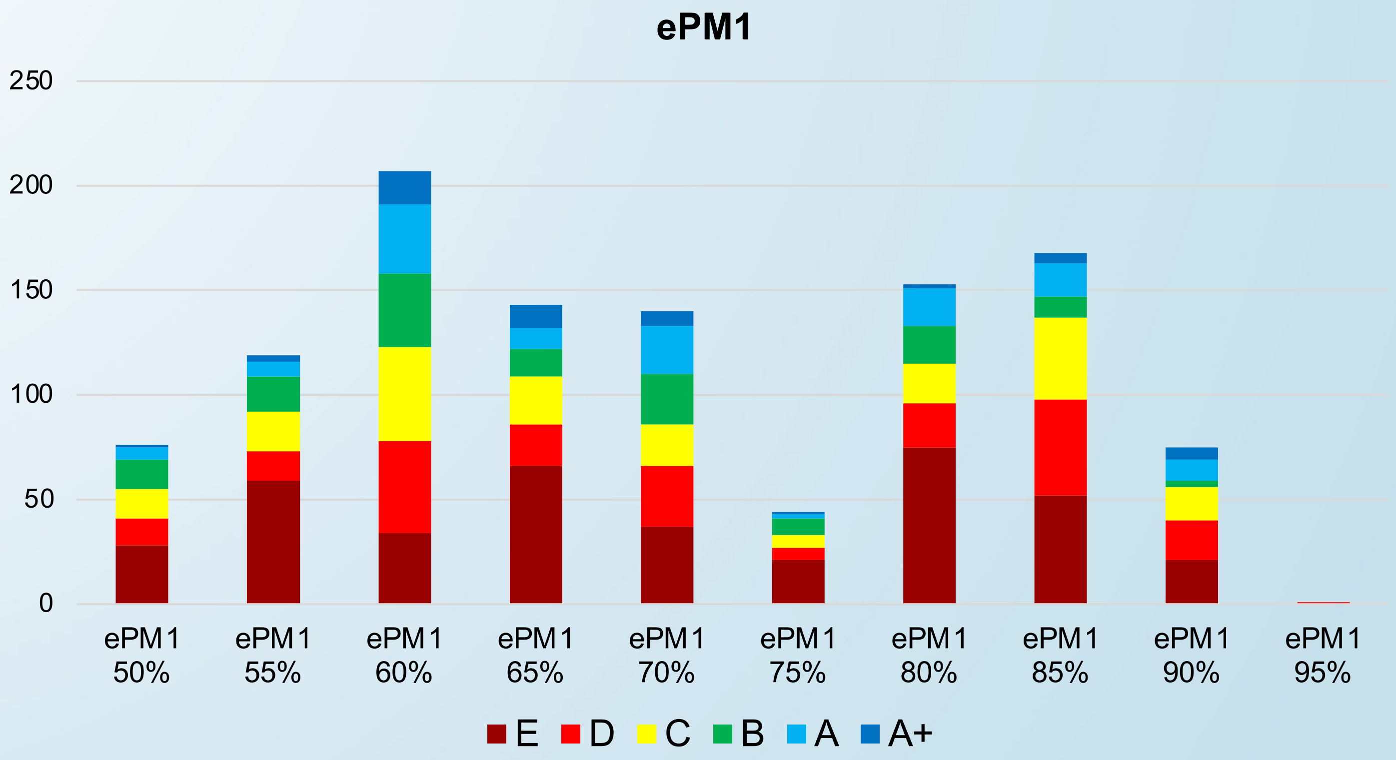
	AEC in kWh/y for ePM10					
	A+	A	B	C	D	E
50 & 55%	450	550	650	750	1100	>1100
60 & 65%	500	600	700	850	1200	>1200
70 & 75%	600	700	800	900	1300	>1300
80 & 85%	700	800	900	1000	1400	>1400
> 90%	800	900	1050	1400	1500	>1500

	AEC in kWh/y for ePM2.5					
	A+	A	B	C	D	E
50 & 55%	700	800	950	1300	1900	>1900
60 & 65%	750	850	1000	1350	1950	>1950
70 & 75%	800	900	1050	1400	2000	>2000
80 & 85%	900	1000	1200	1500	2100	>2100
> 90%	1000	1100	1300	1600	2200	>2200



Analysis

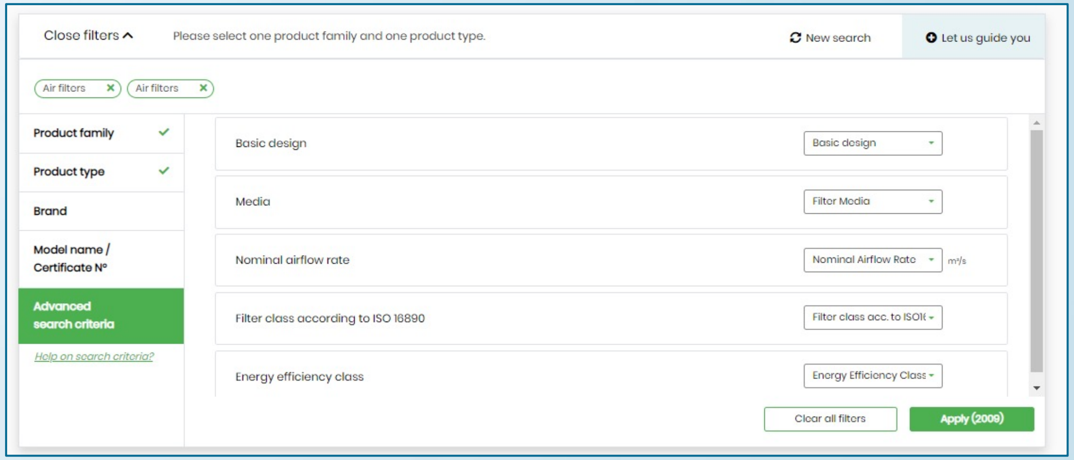

Distribution of energy efficiency classes
A+
A
B
C
D
E
3%
9%
11%
16%
18%
42%


ePM1
250
200
150
100
50
0
ePM1 50%
ePM1 55%
ePM1 60%
ePM1 65%
ePM1 70%
ePM1 75%
ePM1 80%
ePM1 85%
ePM1 90%
ePM1 95%
E D C B A A+

Conclusion

Selection rules:

1. Define the target filter efficiency group (ePM1, ePM2.5, ePM10) and efficiency value in % (e.g. using Eurovent 4/23)
2. Define the target energy efficiency class (A+, A, B, etc.)
3. Use new [Eurovent Certita Certification online selection tool for certified air filters]



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EUROVENT EUROPEAN INDUSTRY ASSOCIATION

EUROVENT MIDDLE EAST

Eurovent Certita CERTIFICATION

Thank you!

Sylvain Courtey

Technical Director

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Roadmap

1. Welcome remarks and introduction
2. ISO 16890: The global air filtration standard
3. Eurovent 4/23: Guidance to the application of ISO 16890
4. Energy efficiency and filter certification
5. **Summary of key takeaways**
6. Panel discussion and Q&A

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Key takeaways

Vanshaj Kaul

Country Representative India, Eurovent Certita Certification

Public Policy professional

Summary

- Health concerns have been rising and all stakeholders now recognise the importance of the air we breathe.
- People spend 90% of their time indoors, therefore focus on IAQ and relating to PM levels is important.
- ISO 16890 offers harmonisation which is welcomed by all stakeholders
- Understanding filter nomenclature & efficient tools is important to size and design the right components including filters for both Indoor and Outdoor Air Quality.
- Energy efficiency and filter efficiency do not contradict each other
- **‘ISO 16890 empowers to choose the right filter’**

Reference documents

- https://eurovent.eu/?q=content/eurovent-423-2020-selection-en-iso-16890-rated-air-filter-classes-third-edition-english
- https://eurovent.eu/?q=content/eurovent-421-2019-energy-efficiency-evaluation-air-filters-general-ventilation-purposes
- https://eurovent.eu/?q=content/eurovent-419-2018-industry-recommendation-concerning-public-enquiries-air-filters-third
- https://eurovent.eu/?q=content/eurovent-air-filters-guidebook-first-edition

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Thank you!

Vanshaj Kaul

Country Representative India, Eurovent Certita Certification

Public Policy professional

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Panel / Q&A

Prabhat PK Goel

Dr. Marc Schmidt

Ilinca Nastase

Sylvain Courtey

Vanshaj Kaul

Moderator: Markus Lattner

Notes

Webinar recordings will be available on the Eurovent and Eurovent Middle East YouTube channels

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KEY PERSPECTIVES ON THE REGION'S HVACR INDUSTRY

Thank You!