

Updated EN779 & Eurovent 4/11



Camfil College, 2013

Updated EN779:2002

~~(EN779:2002)~~

EN779:2012

Updated EN779:2012

There's a difference between filters, even in the same class.

What's in the new EN779:2012 ?

At Camfil we have been working for a better indoor air quality.
Thus, no one is more pleased than us that, from 2012, a new standard imposes tougher requirements.



What's in the new EN779:2012 ?

✓ Average efficiency – valid as before

✓ - nothing changed for G4 – M6

✓ ME – DE (discharge efficiency)

✓ - F7 > 35%

✓ - F8 > 55%

✓ - F9 > 70%

Discharging of media
by using Isopropanol

Filter class now also requires ME limit

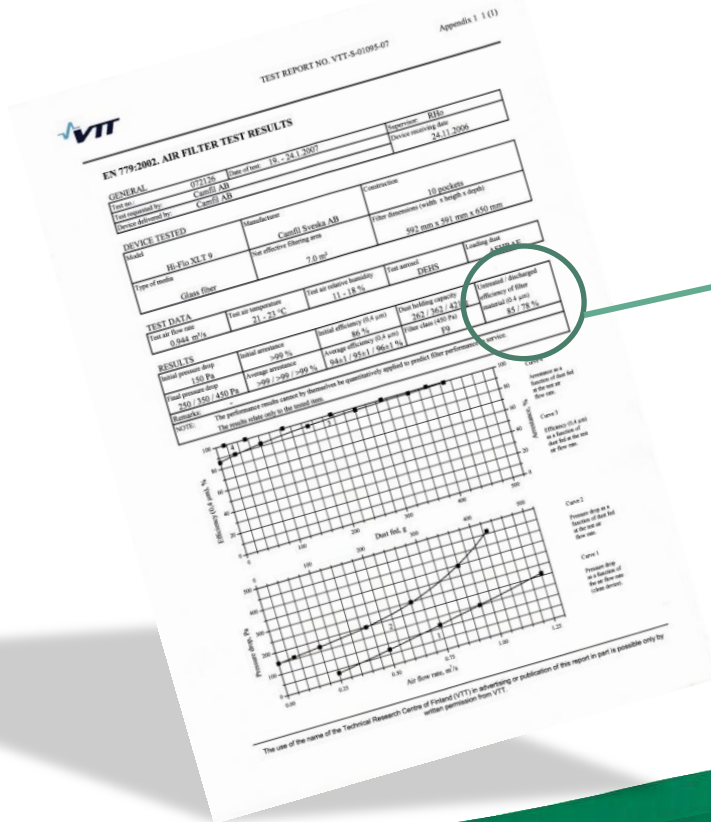
Table 1— Classification of air filters¹⁾

Group	Class	Final test pressure drop Pa	Average arrestance (A_m) of synthetic dust %	Average efficiency (E_m) of 0,4 μ m particles %	Minimum Efficiency ²⁾ of 0,4 μ m particles %
Coarse	G1	250	$50 \leq A_m < 65$	-	-
	G2	250	$65 \leq A_m < 80$	-	-
	G3	250	$80 \leq A_m < 90$	-	-
	G4	250	$90 \leq A_m$	-	-
Medium	M5	450	-	$40 \leq E_m < 60$	-
	M6	450	-	$60 \leq E_m < 80$	-
Fine	F7	450	-	$80 \leq E_m < 90$	35
	F8	450	-	$90 \leq E_m < 95$	55
	F9	450	-	$95 \leq E_m$	70

Has to be reached

Sets filter class for F7, F8 and F9

It is mandatory for all test reports to include a discharged (ME) value to be compliant

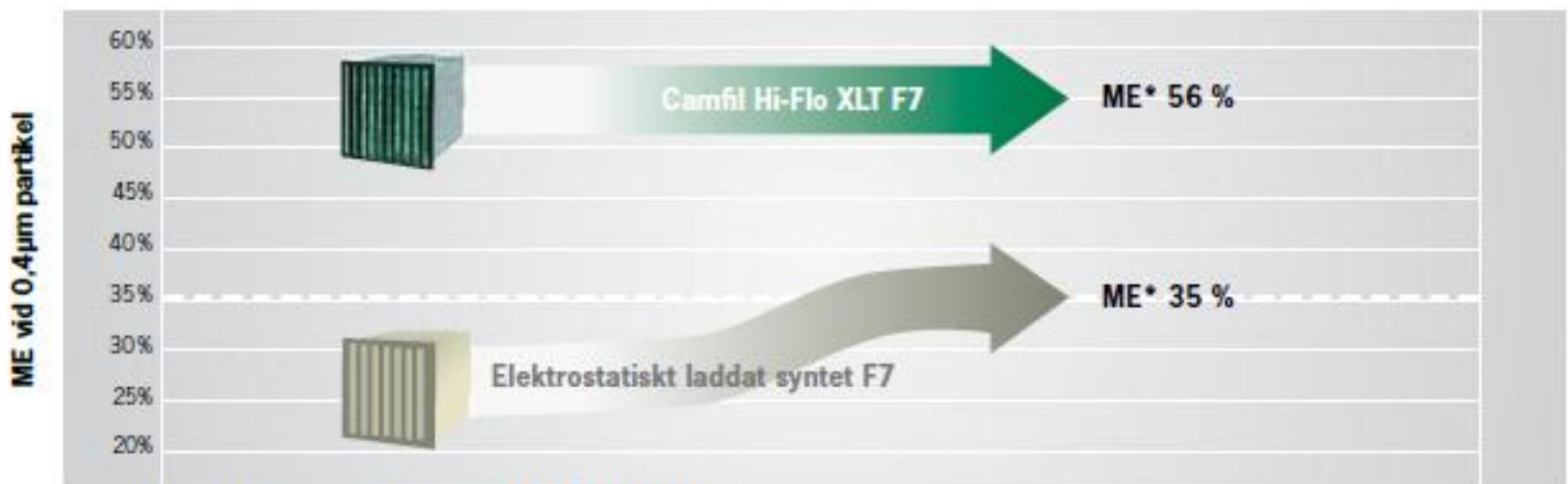


Loading dust:
ASHRAE 52/76
Untreated/ discharged efficiency of media (0,4 µm, Annex A):
57,2 % / 56,1 %

Reports available at
Camfil Intranet - R & D

There's a difference between filters, even in the same class.

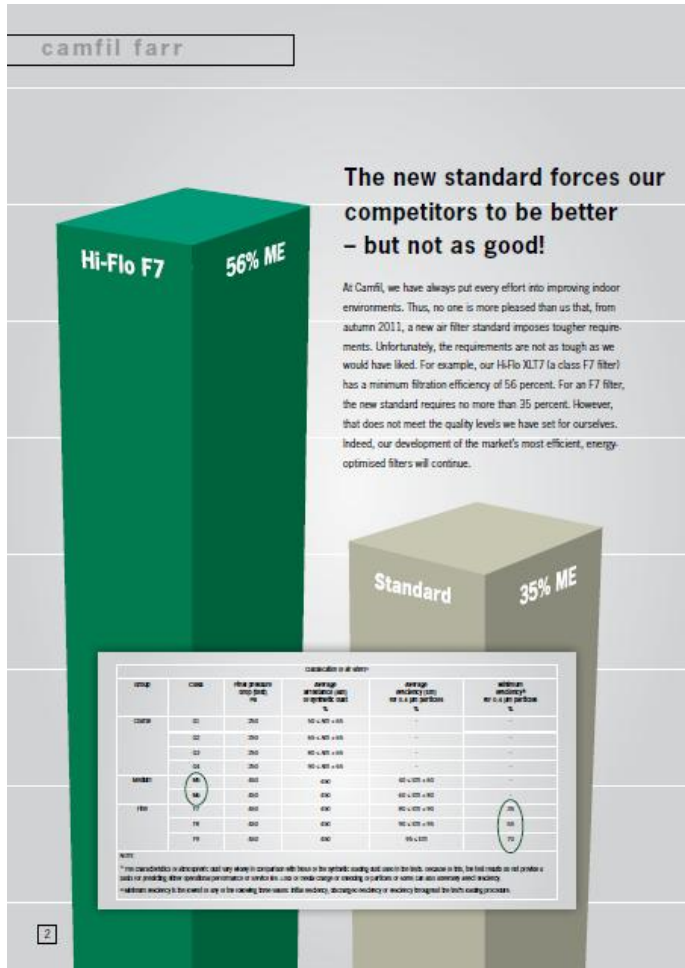
What's in EN779:2012 ?



ME = Minimum efficiency enl. EN 779:2011



Brochure



What does EN 779:2011 do?



The new standard forces our competitors to be better – but not as good!

At Camfil, we have always put every effort into improving indoor environments. Thus, no one is more pleased than us that, from autumn 2011, a new air filter standard imposes tougher requirements. Unfortunately, the requirements are not as tough as we would have liked. For example, our Hi-Flo XLT7 (a class F7 filter) has a minimum filtration efficiency of 56 percent. For an F7 filter, the new standard requires no more than 35 percent. However, that does not meet the quality levels we have set for ourselves. Indeed, our development of the market's most efficient, energy-optimised filters will continue.

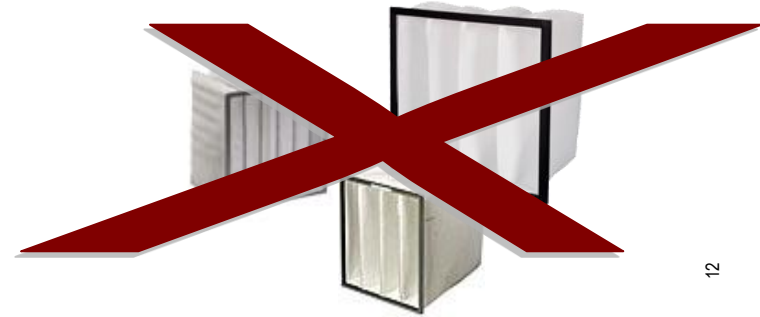
Updated EN779:2012



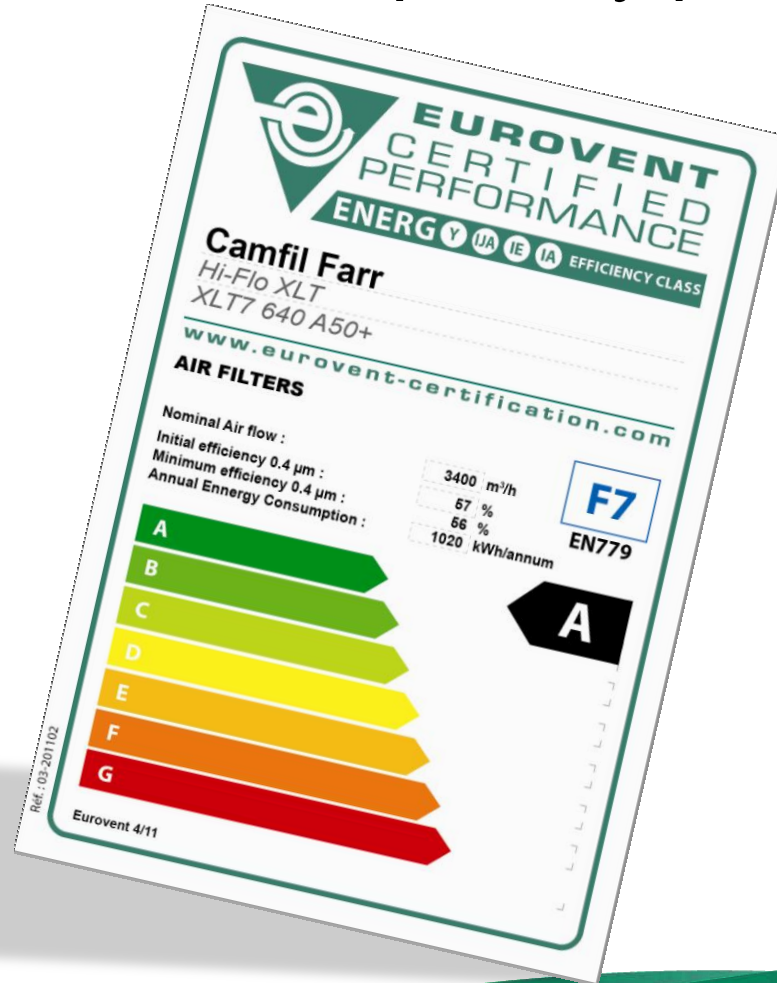


Introduction

- Imagine that you have the possibility to get all the low class filters out of the market
- Imagine that we have the proof that your argumentation, over the last years, was absolutely correct.....
- Imagine you have an official and independent tool to compare Camfil products with competitors regarding both:
 - Energy consumption
 - Filtration efficiency

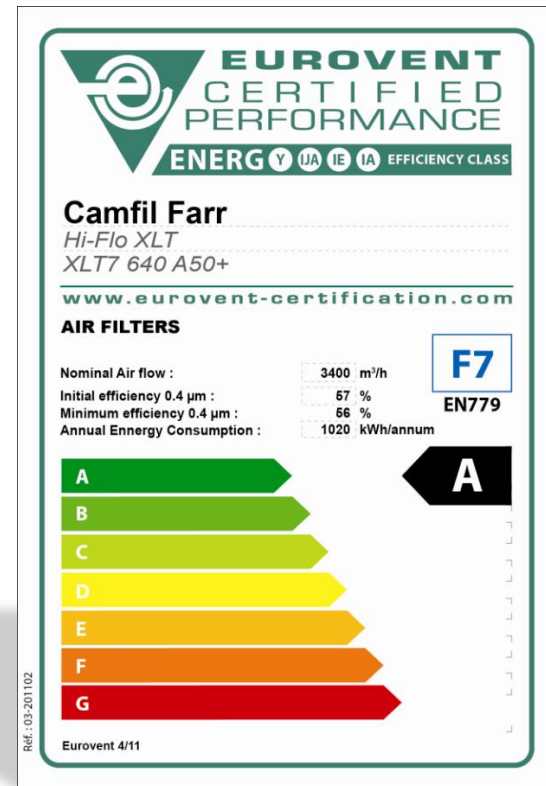


Camfil and Eurovent proudly presents...



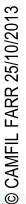
Eurovent Energy Efficiency Classification

- Independent label
 - Makes filters comparable
- Escape price discussions
 - Talk about IAQ and
 - Energy
- Select best solution
 - Energy saving (Eurovent)
 - IAQ (EN779:2011)

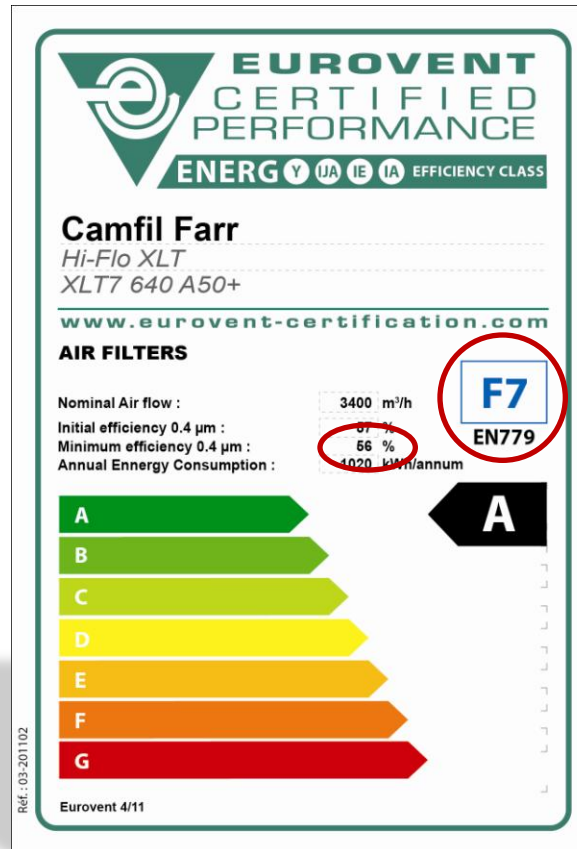




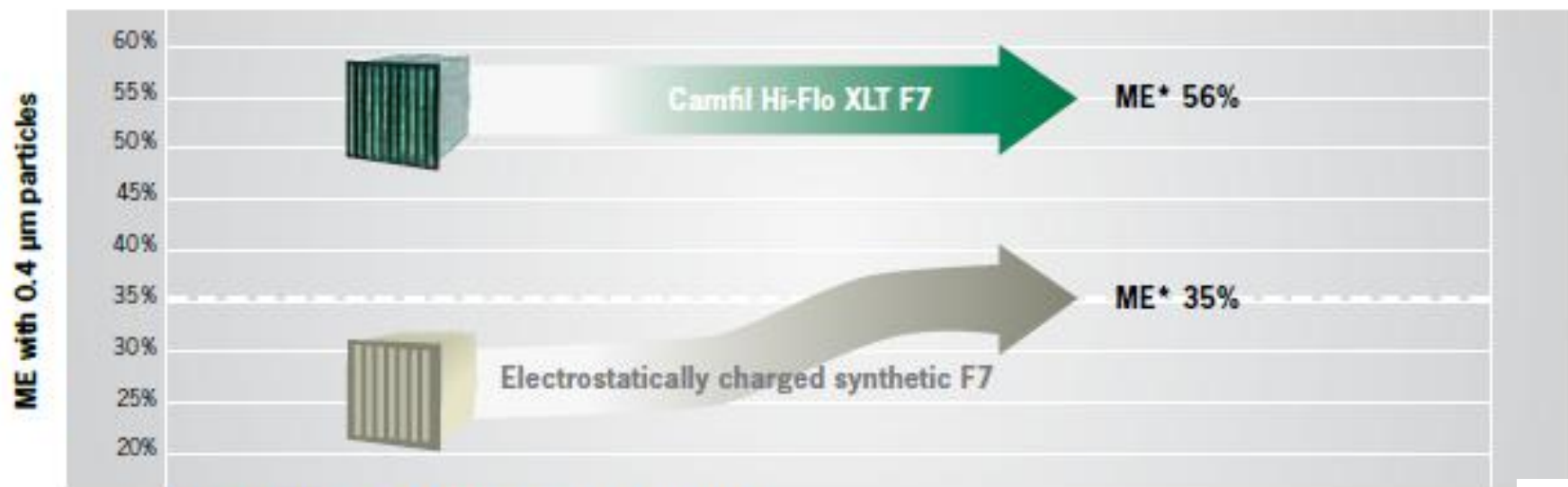
Eurovent label is based on the new EN779:2012 standard only



Filter class and Minimum Efficiency



Camfil will not lower the high end product but instead increase low end products efficiency



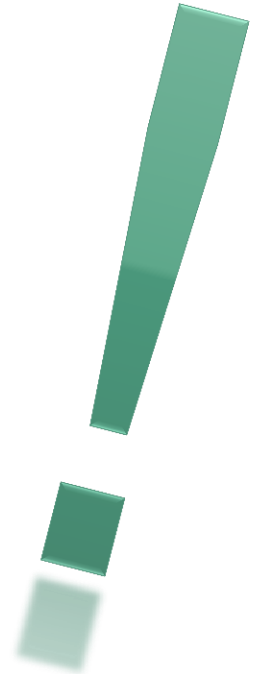
ME = Minimum efficiency as per EN 779:2011

Only having F7 as a criteria when buying a filter can create 40% worse indoor air quality

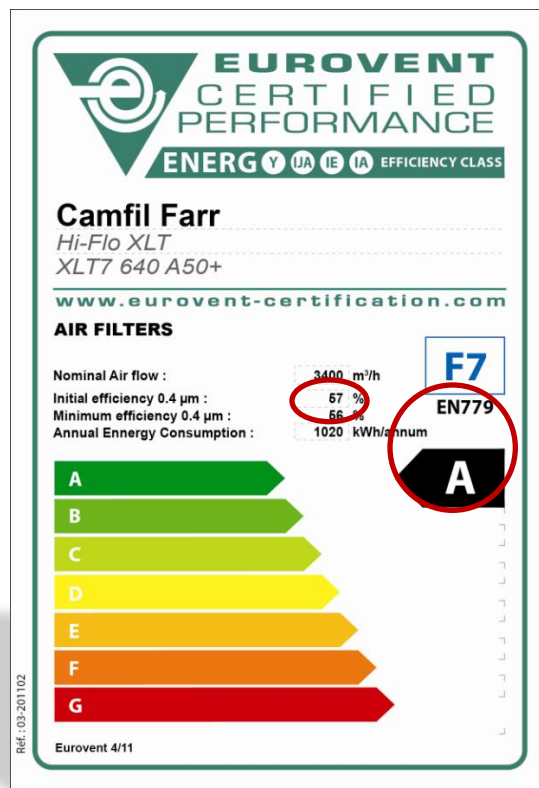
- Glass fibre media F7 > 50% efficiency – IAQ
– Hi-Flo, Opakfil etc
- New EN779:2011 only requires 35% for F7
- Might lead to > 40% lower IAQ

The low end market will disappear and give Camfil opportunity to upgrade

- Easy to understand what filter efficiency you get
 - Minimum efficiency is the “real” efficiency
- Easy to understand energy consumption of filter
 - Same rating as for white goods
- Synthetic media must improve to reach 35% ME
 - In most cases result in high pressure drop

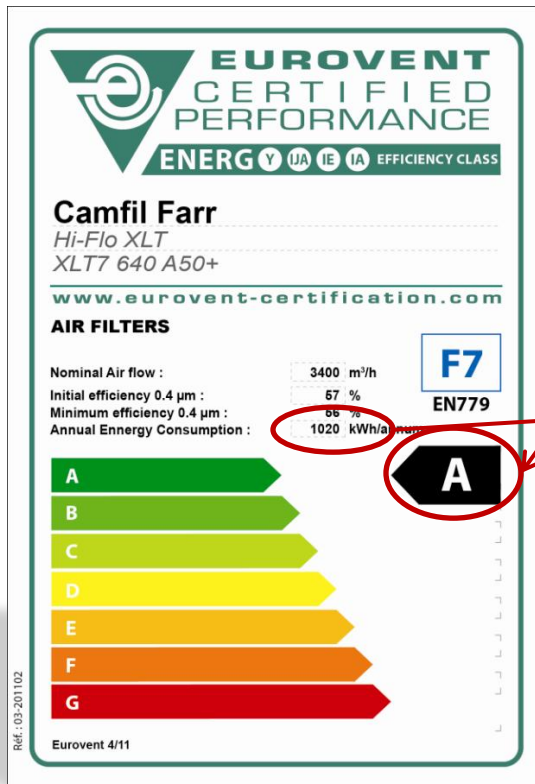


Energy classification and consumption



Eurovent 4/11

All the information needed is available in the guidelines which is publicly available from Eurovent

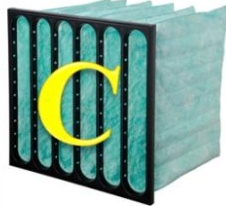


Filter class	G4	M5	M6	F7	F8
MTE	—	—	—	MTE ≥ 35%	MTE ≥ 55%
	$M_G = 350$ g ASHRAE	$M_M = 250$ g ASHRAE		$M_F = 100$ g ASHRAE	
A	0 – 600 kWh	0 – 650 kWh	0 – 800 kWh	0 – 1200 kWh	0 – 1600 kWh
B	> 600 kWh – 700 kWh	> 650 kWh – 780 kWh	> 800 kWh – 950 kWh	> 1200 kWh – 1450 kWh	> 1600 kWh – 2000 kWh
C	> 700 kWh – 800 kWh	> 780 kWh – 910 kWh	> 950 kWh – 1100 kWh	> 1450 kWh – 1700 kWh	> 1950 kWh – 2300 kWh
D	> 800 kWh – 900 kWh	> 910 kWh – 1040 kWh	> 1100 kWh – 1250 kWh	> 1700 kWh – 1950 kWh	> 2300 kWh – 2650 kWh
E	> 900 kWh – 1000 kWh	> 1040 kWh – 1170 kWh	> 1250 kWh – 1400 kWh	> 1950 kWh – 2200 kWh	> 2650 kWh – 3000 kWh
F	> 1000 kWh – 1100 kWh	> 1170 kWh – 1300 kWh	> 1400 kWh – 1550 kWh	> 2200 kWh – 2450 kWh	> 3000 kWh – 3350 kWh
G	> 1100 kWh	> 1300 kWh	> 1550 kWh	> 2450 kWh	> 3350 kWh

Changing a C filter to an A filter results in energy savings much larger than the price difference

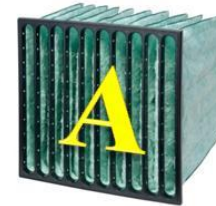
Hi-Flo XLS7 - 640

1688 kWh / year



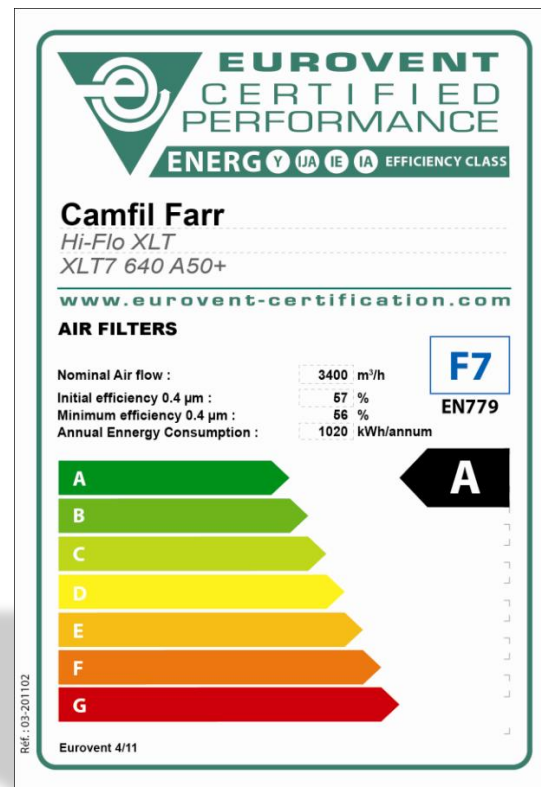
Hi-Flo XLT7 - 640

1020 kWh / year



- Energy saving: $1688 - 1020 = 648 \text{ kWh} \approx \$60 / \text{year}$
- Price difference to end-users in Asia $\approx \$15 \text{ per filter}$

What is needed to provide this information?



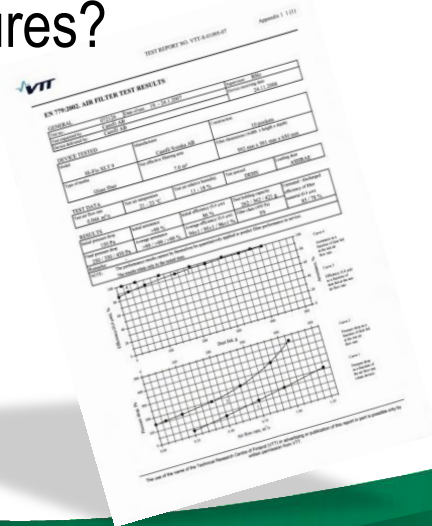
What's needed to be able to classify filters

- EN779:2011 test rig
- ASHRAE Dust feeding
- EN779:2011 Test Report



Without that – how can competitors verify their product classification?


- Copy us?
- Just guess?
- Fooling around with some figures?



When visiting customer:

- Always be prepared to show a complete EN779:2012 report
- We have all our Energy Efficiency Classified filters tested and verified

Eurovent Certification Programme for Air Filters now includes new data

Model	Filter media	Basic design	Depth/lenght, mm	No. of bags or "V:s"	Media velocity, m/s	Air flow rate, m³/h	Initial pressure drop, Pa	ME %	Energy Consump kWh	Filter class	Energy class
Product Famil Hi-Flo XL							EN779:2011				
<div><div>↑</div><div>↑</div><div>One decimal Two decimals</div></div>							<div></div>				
Basic design nomenclature: e.g.											
XLT 7 (HFGP-592x592x640-10-25)	Glass	Bag filter	640	10	0,13	3400	75	56,1	1035	F7	A

Eurovent 4/11

Facts:

- The Eurovent label will appear on the filter box in 2013
- Data available on www.eurovent-certification.com

Summary:

- Energy consumption and filtration efficiency is now comparable by public official figures from competitor participating in the Eurovent Certification Programme

Message:

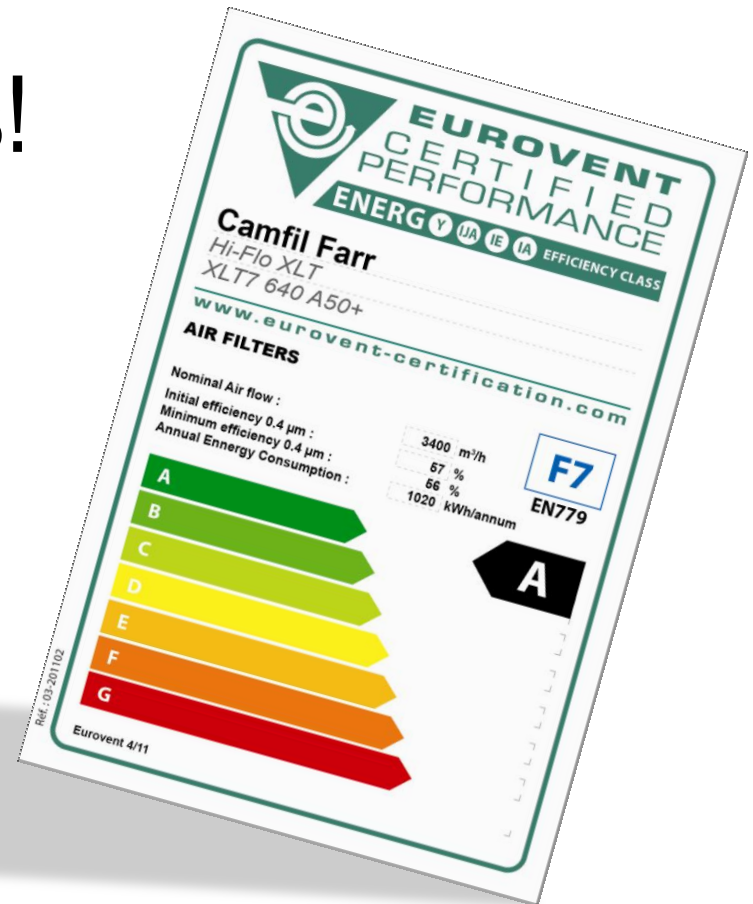
- Save energy – but never compromise on air quality

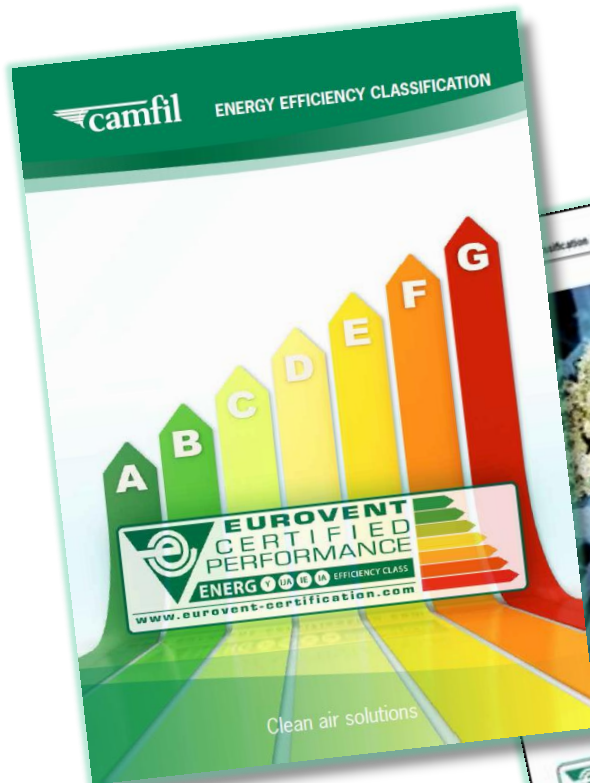
Now, the choice is yours!

"Low energy consumption in combination with a high indoor air quality."

Labels are not yet being used by CFM, but you can still start selling this tomorrow!

Certification is in place for selected products





New

ENERGY EFFICIENCY CLASSIFICATION

Clean air solutions

A NEW WAY OF COMPARING AIR FILTERS

At last, buyers of air filters will find it a lot easier to find the right filter - regarding both energy efficiency and indoor air quality. In Europe, objective energy efficiency classification can be applied to all air filters for the first time. The classification is based on EN179:2012 and will give you a good understanding of annual energy consumption, initial efficiency and minimum efficiency.

Higher demands
As the price of energy increases and the demands of reducing CO₂ emissions get tougher, the energy consumption related to air filters has become the focus of attention. Therefore, air filters are classified only by their average efficiency. The new energy classification is for more precise.

The new standard
The energy consumption of air filters can be determined as a function of the volume flow rate, the fan efficiency, the operation time and the average pressure drop. Due to the dust loading during operation, the pressure drop of an air filter is constantly increasing. The related energy consumption during a certain period of time can be calculated from the integral average of the pressure drop over this period of time.

Put your supplier to the test
Many suppliers do not test their filters properly, making it impossible for customers to compare different brands. At Camfil, we test all our filters to guarantee a high standard of quality. Does your air filter supplier have what it takes?

- ☒ Is the supplier certified by Eurovent?
- ☒ Are there labels on all boxes?
- ☒ Is there a test protocol?
- ☒ Are all tests based on EN179:2012?

Calculation and classification

The new standard measures both filtration efficiency and pressure drop as a function of dust loading. On the basis of these figures, the energy performance of a filter over an operating period of one year is simulated in a laboratory. This representative energy value is used for a classification of air filters into energy classes.

The calculation used in the new energy efficiency classification by Eurovent 6/11:

$$IE = \frac{Q_v \cdot \Delta p \cdot t}{\eta \cdot 1000}$$

where:

- IE = Integral average of the pressure drop
- Q_v = Volume flow rate
- Δp = Average pressure drop
- t = Operating time
- η = Fan efficiency

Filter class	IE	Q _v	Δp	t	η
A	0 - 1000 kWh	0 - 1000 m³/s	0 - 1000 Pa	0 - 1000 h	0 - 1000 %
B	1000 - 2000 kWh	1000 - 2000 m³/s	1000 - 2000 Pa	1000 - 2000 h	1000 - 2000 %
C	2000 - 3000 kWh	2000 - 3000 m³/s	2000 - 3000 Pa	2000 - 3000 h	2000 - 3000 %
D	3000 - 4000 kWh	3000 - 4000 m³/s	3000 - 4000 Pa	3000 - 4000 h	3000 - 4000 %
E	4000 - 5000 kWh	4000 - 5000 m³/s	4000 - 5000 Pa	4000 - 5000 h	4000 - 5000 %
F	5000 - 6000 kWh	5000 - 6000 m³/s	5000 - 6000 Pa	5000 - 6000 h	5000 - 6000 %
G	6000 - 7000 kWh	6000 - 7000 m³/s	6000 - 7000 Pa	6000 - 7000 h	6000 - 7000 %

New product names provide additional information
Our new product name suffixes are a combination of energy rating and minimum efficiency. They will point out the difference between our filters and those of our competitors. Here are three examples from our air filter product range.

Hi-Flo A6 E
Hi-Flo A6 is an A6 product with a minimum efficiency of 95% and will be called: Hi-Flo A6 E

Depth	Energy rating	Energy consumption	Initial efficiency	Minimum efficiency
1	E	1.200 kWh/m³	95%	95%

Hi-Flo XL7 A50+
Hi-Flo XL7 is an A50+ product with a minimum efficiency of 99.95% and will be called: Hi-Flo XL7 A50+

Depth	Energy rating	Energy consumption	Initial efficiency	Minimum efficiency
1	A	0.100 kWh/m³	99.95%	99.95%

Opakfil Energy F9 A80+
Opakfil Energy F9 is an A80+ product with a minimum efficiency of 99.95% and will be called: Opakfil Energy F9 A80+

Depth	Energy rating	Energy consumption	Initial efficiency	Minimum efficiency
1	A	0.100 kWh/m³	99.95%	99.95%

Eurovent Certification Programme for Air Filters



www.eurovent-certification.com

QUESTIONS ?

