

Energy and Health

Key role of
Filtration
and
Ventilation
in Buildings



Jan Andersson

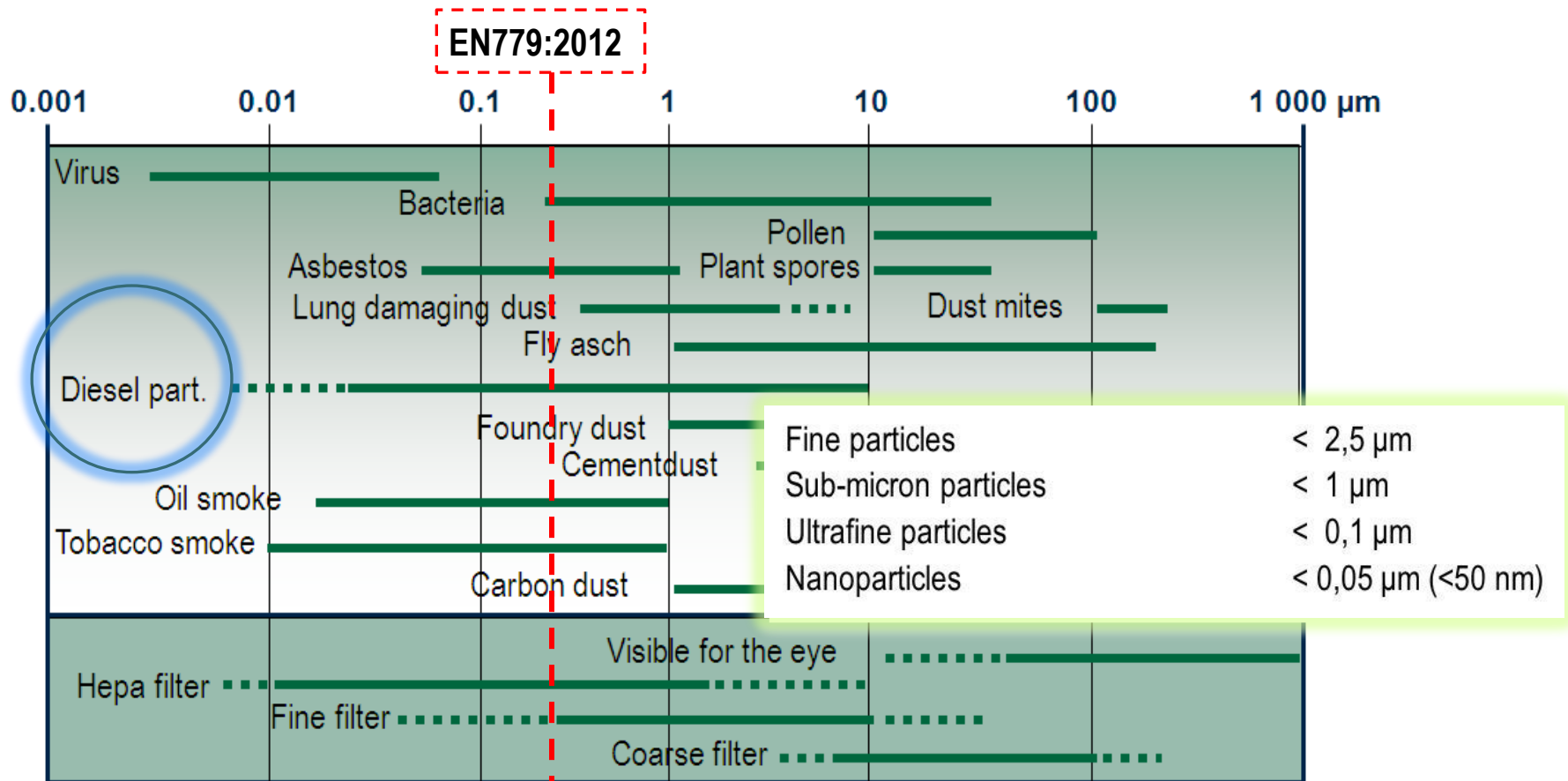
deputy Managing Director

Camfil Svenska AB

&

Chairman, Eurovent PG04B Air Filters

The particle size of some different airborne substances



Source: ASHRAE Handbook

Fine filters M5-F9

Particles and health

Miljöhälsorapport 2009

Particles – health effects

- ❑ Traffic (Fine and ultra-fine particles)
 - Cancer – Exhausts contains PAH-combination. (Polycyclic Aromatic Hydrocarbons)
 - Cardiac infarction; long term exposure - Increased risk to die of heart attack^{1,2}
 - Respiratory disease – COPD, decreased respiratory function, asthma
 - Children are vulnerable, specifically small children
- ❑ Small wood fire (similar to traffic problems)
- ❑ Other combustion processes



¹ Miller KA, Siscovick DS, Sheppard L, Shepherd K, Sullivan JH, Anderson GL et al. Long term exposure to air pollution and incidence of cardiovascular events in women. N Engl J Med. 2007; 356(5):447–58

² Rosenlund M, Berglind N, Pershagen G, Hallqvist J, Jonson T, Bellander T. Longterm exposure to urban air pollution and myocardial infarction. Epidemiology 2006; 17(4):383–90..

Particles and Health

EnVIE – "Co-ordination Action on Indoor Air Quality and Health Effects"



Pollution sources

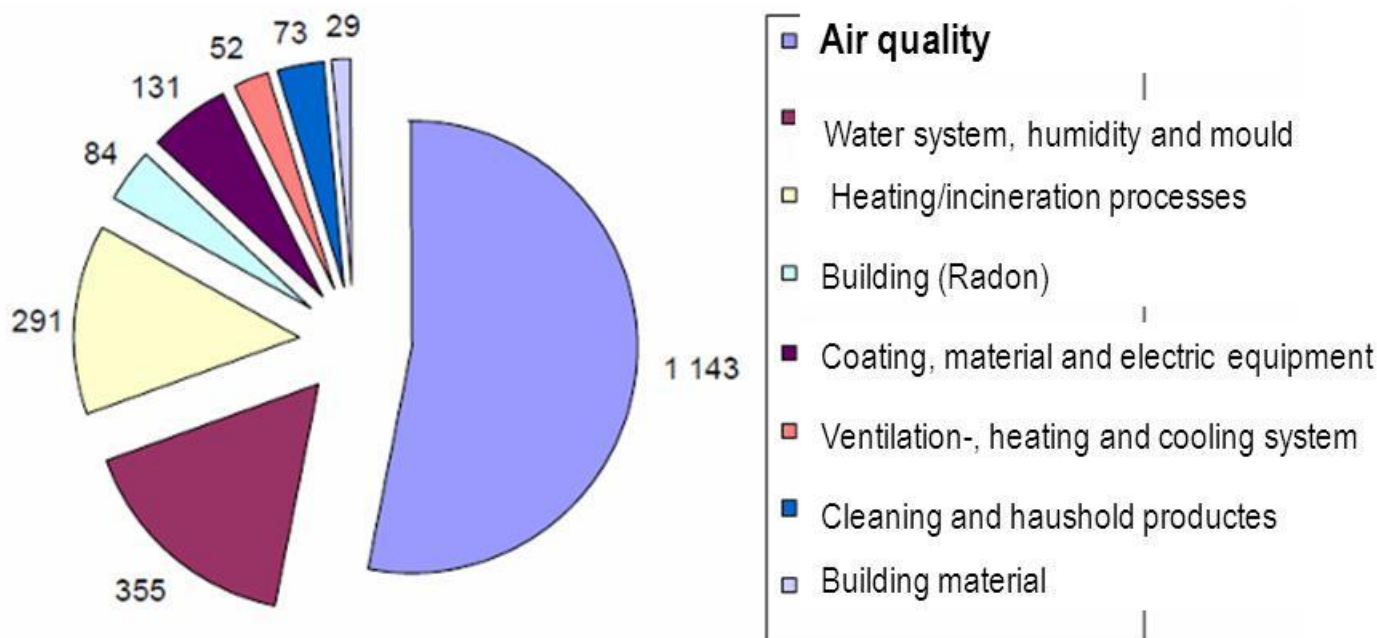


Figure 6. Contribution of the sources of indoor air pollution to symptom and disease burden in Europe, DALYs per year (thousands). ETS is not included.

*) Disability Adjusted Life Years

Fans in ventilations systems where air filters are used consumes ~ 197 TWh / year

Filter can contribute with 30% of the total energy cost in the ventilation system

Energy consumption - ventilation fans in Europe

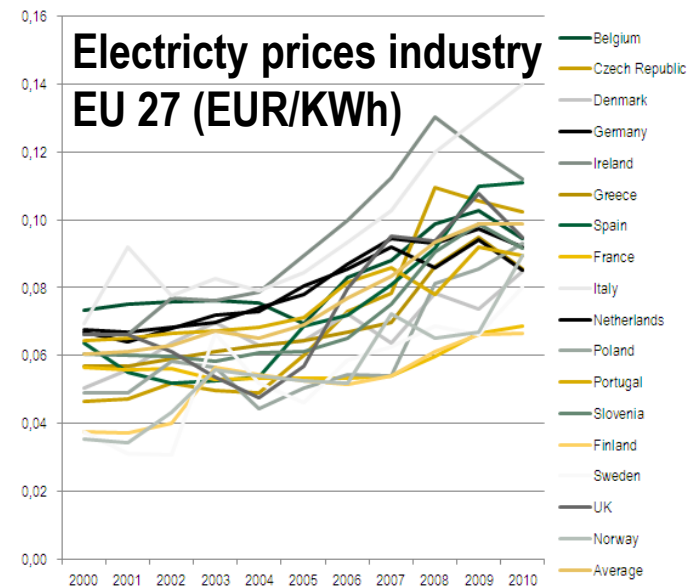
Country **GWh/year**

Tyskland	43.217
Frankrike	32.861
England	28.628
Italien	24.259
Spanien	15.634
Sverige	12.279
Nederländerna	8.730
Finland	8.279
Belgien	6.729
Österrike	4.722
Grekland	3.546
Portugal	3.240
Danmark	2.872
Irland	1.563
Luxemburg	529
Total	197.087

From 2008



Source: Fraunhofer-Institut ISI



Source: Eurostat, 2011

Indoor Environment – clean air

Filter class EN779:2012	Energy use	Energy Class	Filtration Efficiency
F9	1990 kWh	A	≈ 86%
F7	930 kWh	A	≈ 54%
F6	780 kWh	A	≈ 25%
F5	620 kWh	B	≈ 8%

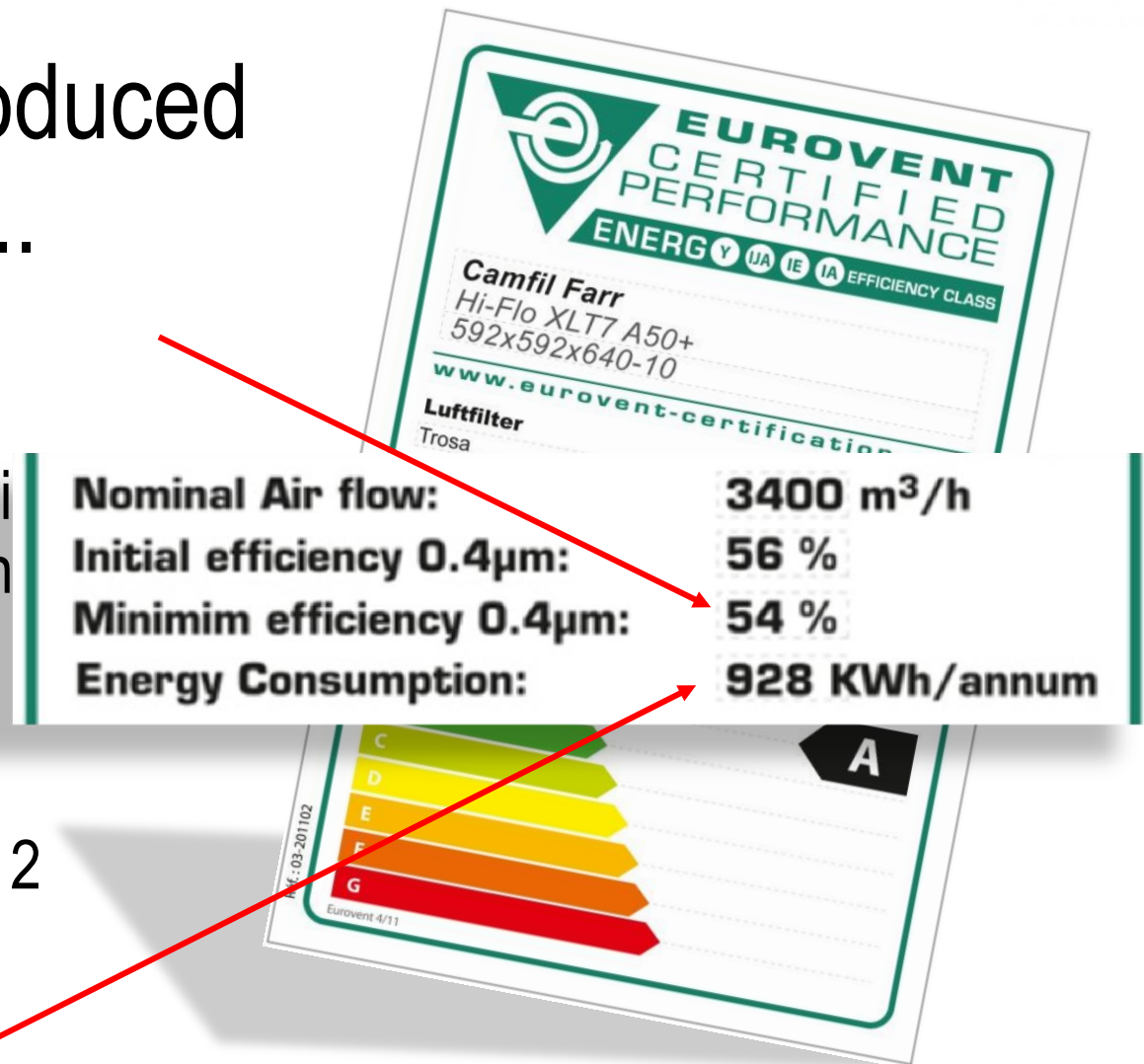
EN13779:2007 clearly specifies the filter class that is required to achieve preferred indoor air quality

Eurovent introduced 2012-01-01.....

“Energy Efficiency
Classification of Air Filtration
for general ventilation

Eurovent 4/11

Based on EN779:2012



**THANK YOU
FOR YOUR
ATTENTION!**

