



An overview of current and future Ecodesign regulations  
for motors and fans

ISH 2019

# EVIA at a glance



48 Members

From 17 to 48 members in 7 years!

(42 companies, 6 national associations)

# Ventilation products represented

Residential  
Ventilation

Non-  
Residential  
Ventilation

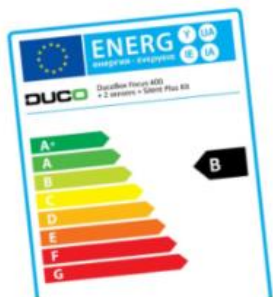
Fans



# Our priorities



# EVIA at ISH 2019



## 12:00-13:00 - An overview of current and future Ecodesign rules for fans, motors & ventilation units

- Ronald Piers de Raveschoot, European Commission
- Manfred Mueller, Rosenberg
- Holger Thamm, Stiebel Eltron
- Martin Lenz, Eurovent

**Moderator:** Geoff Lockwood, Ebmpapst

## LUNCH provided by EVIA

Please join us at Hall 8.0, Booth A35

## 14:00-15:00 - How to evaluate indoor air quality for residential ventilation?

- Jelle Laverge, Universiteit Gent
- Yves Lambert, Renson
- Jelmer de Jong, Brink Climate Systems



**Moderator:** Claus Haendel, EVIA

**Where to find us?**  
**Hall 8.0, Booth A35**



## 15:00-16:00 - Smart and connected: what does this mean for fans and ventilation?

- Jürgen Albig, ZIEHL-ABEGG
- Karl Heinz Belser, Johnson Controls System & Service GmbH
- Roland Ullmann, Siemens

**Moderator:** Yves Lambert, EVIA



# Programme



- Introduction to the panel – **Geoff Lockwood**, Ebm-papst
- Ongoing and future regulatory framework for fans & motors – **Ronald Piers de Raveschoot**, European Commission
- EVIA's position on Lot 11 and lot 30 – **Geoff Lockwood**, Ebm-papst
- EVIA's ongoing work on Lot 6 revision
  - Implications for non-residential ventilation – **Manfred Mueller**, Rosenberg
  - Implications for residential ventilation – **Holger Thamm**, Stiebel Eltron
- Update on Eurovent's position – **Martin Lenz**, Trox
- Q&A



**Ronald Piers de Raveschoot**  
European Commission



**Geoff Lockwood, Ebm-papst**  
Chair of EVIA's Fans Working Group

**EVIA's position on Lot 11 and Lot 30**



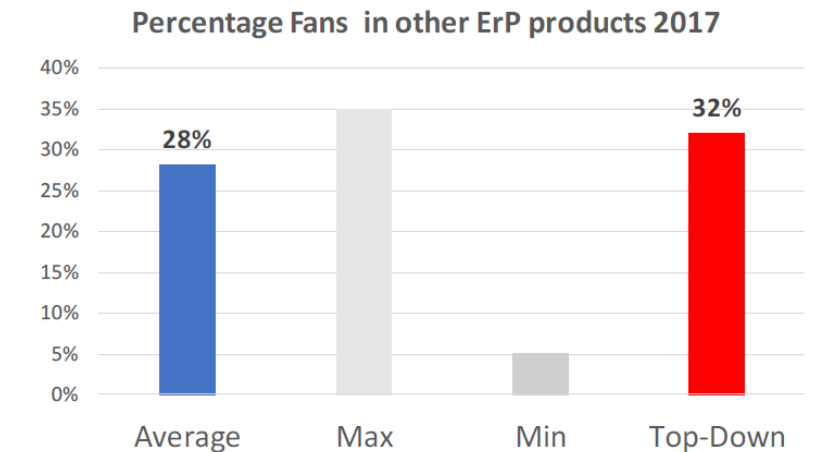
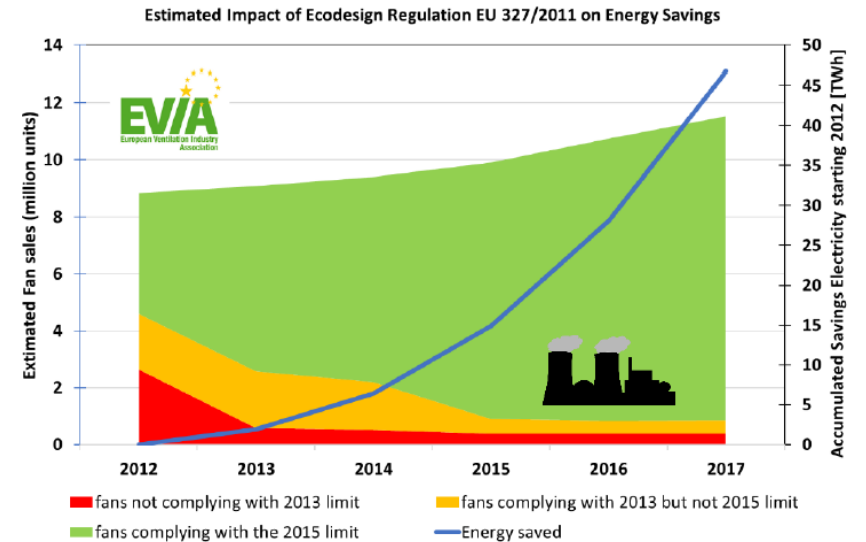
# Ecodesign requirements for motors

- Cascading is retained
- 8-pole motors are included



# Ecodesign requirements for fans

- Is cascading retained?
- The revised limits were debated at the consultation forum of April 2015



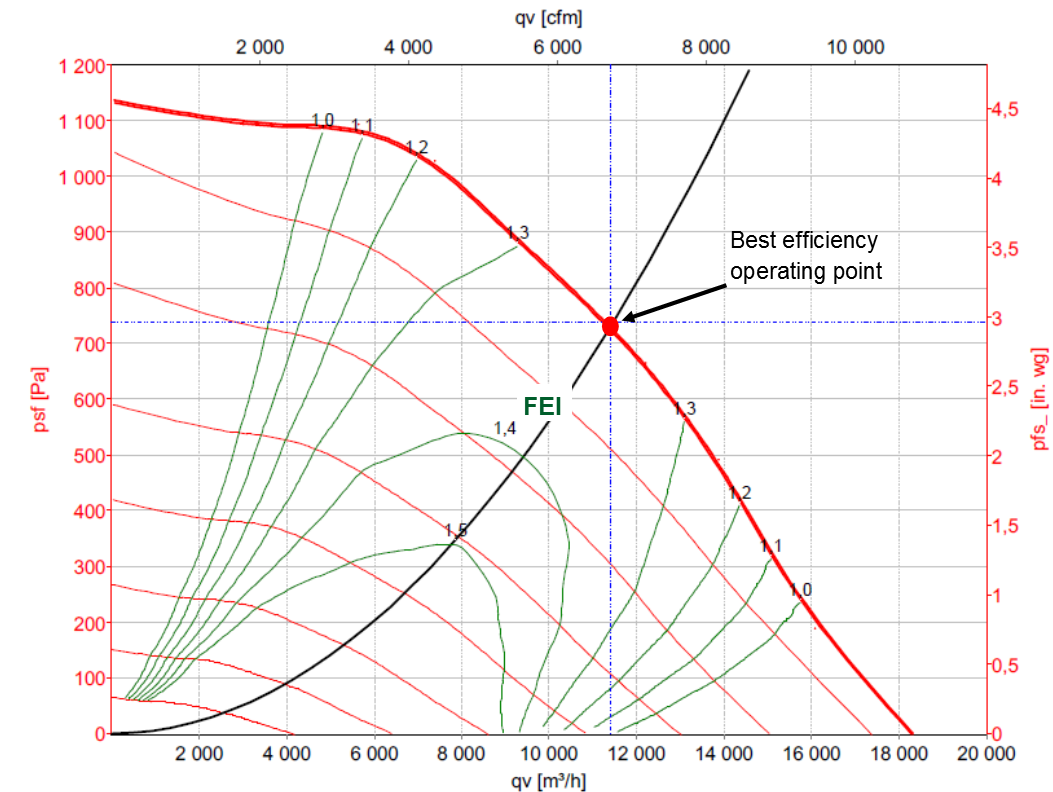
# Future requirements?

## Extended Product and Part-Load

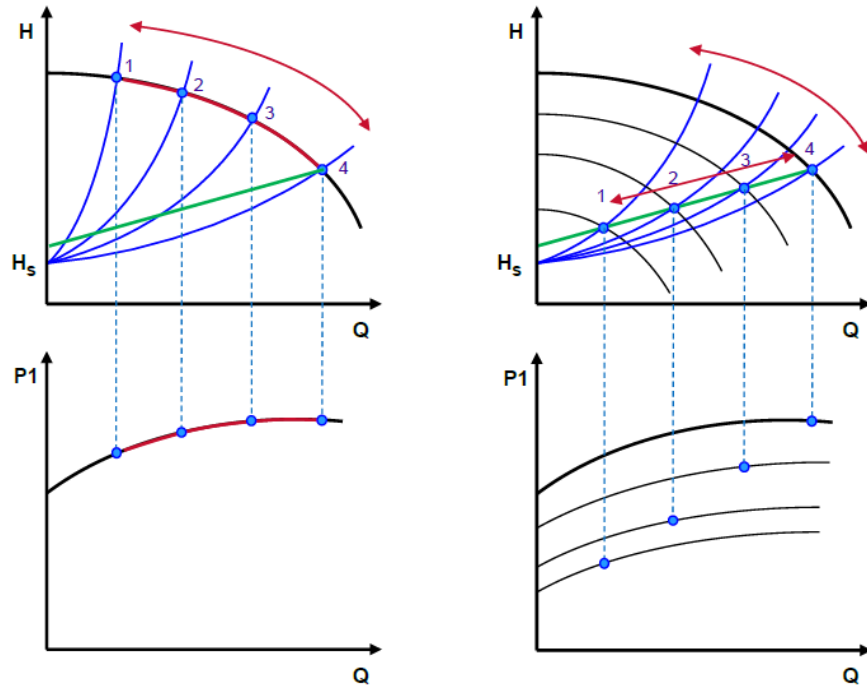
- Commission mandate M500
  - Phase 1 – establish harmonised standards ‘for establishing the energy consumption and other parameters of fans’
  - Phase 2 – to create a harmonised standard which covers a ‘system efficiency metric in a second phase’
- IEC – Advisory Committee on Energy Efficiency (ACEE)
- AMCA – Fan Energy Index
- Existing ecodesign regulations for Circulators sets a precedence
- Ecodesign regulations for Pumps is likely to follow the circulator approach

# 'System Efficiency Metric' 'Extended Product' 'Part-Load'

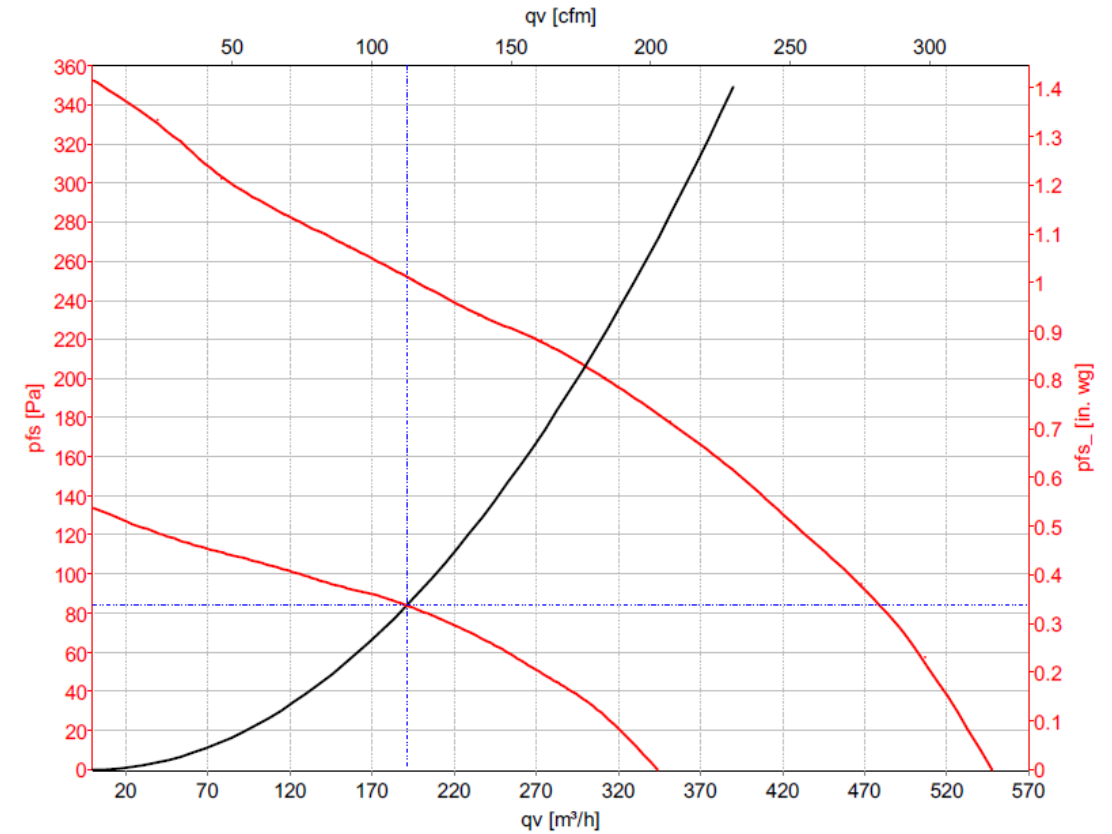
Motor control		Motor	Mechanical equipment		Driven application			
IEC TC 121	IEC TC 22 SC 22G	IEC TC 2	ISO TC 41	ISO TC 60	ISO TC115	ISO TC 117	ISO TC 86	ISO TC 118
Switchgear & control-gear	Adjustable speed drive	Rotating machinery	Pulleys & belts	Gears	Pumps	Fans	Cooling-Compressors	Air-Compressors
1927	1934	1911	1947	1947	1964	1964	1957	1965



# 'System Efficiency Metric' 'Part-Load'



Source prEN 17038-2 *testing and calculation of energy efficiency index (EEI) of a pump*



Part-load; a portion of full load





**Manfred Müller, Rosenberg**

Chair of EVIA's Non-Residential Ventilation Working Group

**EVIA's position on Lot 6**

# Revision of EU-Regulation EU/1253/2014

## Time schedule

### Current status of the revision of the Regulation

- **January-February 2019:** Consultant chosen for study/impact assessment
- **March 2019:** submit preliminary comments, position papers, data to the European Commission
- **Late May 2019 or June 2019:** 1<sup>st</sup> public stakeholder meeting in Brussels
- **December 2019:** first draft review study to be submitted to the European Commission
- **Early 2020:** publication of the review study
- **Early 2020:** Consultation Forum to take place in Brussels on the new regulation

### EVIA activities

- **February 2018:** EVIA first one pager position paper submitted to EU Commission
- **June 2018:** EVIA second and more detailed position paper submitted to EU Commission
- **March-April 2019:** EVIA ongoing formalization of comments submitted to the EU Commission

# Revision of EU-Regulation EU/1253/2014

## main Targets and Position of EVIA Working Group NR Ventilation

1. **Simplifying & harmonising** definitions and requirements, correct editorial issues
2. **completing** and state **requirements** more **precisely** and **clear** for better handling
3. **additional input** to support commissions targets to **reduce CO<sub>2</sub> emission** considering also **economical** and **market / market participants aspects**



Release 3 – 10'

VERORDNUNGEN

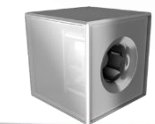
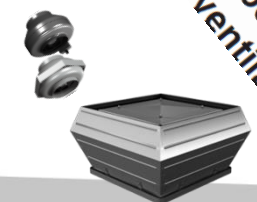
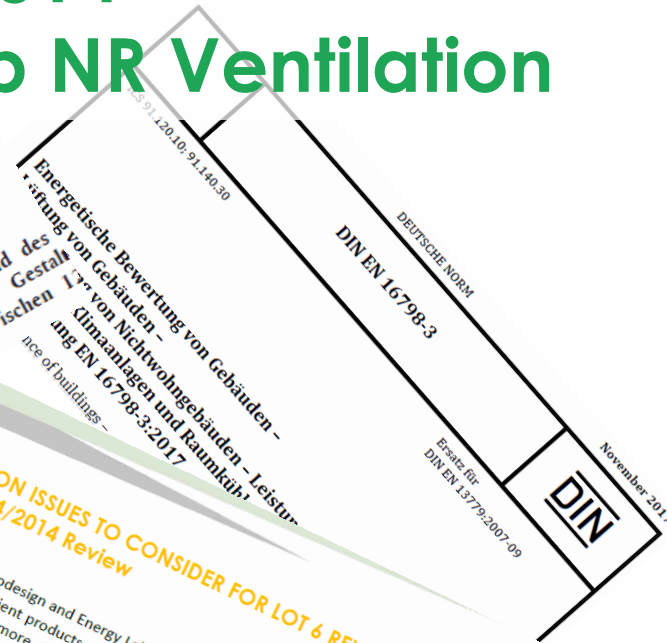
VERORDNUNG (EU) Nr. 327/2011 DER KOMMISSION  
vom 30. März 2011  
zur Festlegung von Anforderungen an die  
durch Motoren mit einer elektrischen  
Leistung von 500 W angetriebenen  
Ventilatoren

EVIA/Eurovent Guidance Document on  
Ecodesign requirements for ventilation units

EVIA POSITION ON ISSUES TO CONSIDER FOR LOT 6 REVISION  
EU 1253 and 1254/2014 Review

EVIA strongly supports the Ecodesign and Energy Labelling legislations. Both regulations are pushing the market to develop energy efficient products and supporting the harmonisation of European Products as well as test methods. Furthermore, they continuously enhance the positioning of European Products on export markets. To improve the legislation, EVIA has been discussing the need to consider certain elements for the future revision of EU 1253 and 1254/2014 on ventilation products, and calls on the European Commission to consider the following aspects when launching the tendering process to select the consultant who will conduct the relevant studies and impact assessments ahead of the stakeholder and consultation procedure.

General Aspects



# Revision of EU-Regulation EU/1253/2014

## main Targets and Position of EVIA Working Group NR Ventilation

1. Simplifying & harmonising definitions and requirements, correct editorial issues

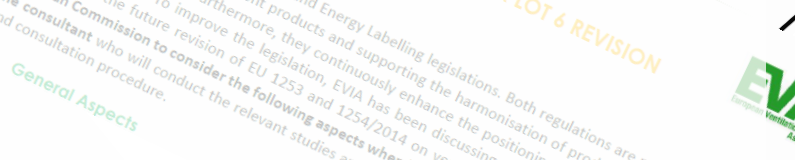
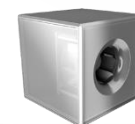
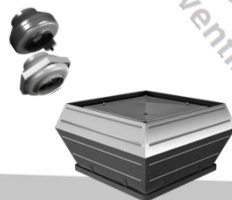
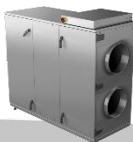
→ more acceptance & less discussions on interpretation

2. completing and state requirements more precisely and clear for better handling

→ more transparency in market surveillance aspects

3. additional input to support commissions targets to reduce CO<sub>2</sub> emission

→ further CO<sub>2</sub> emission reduction  
considering also economical and market / market participants aspects

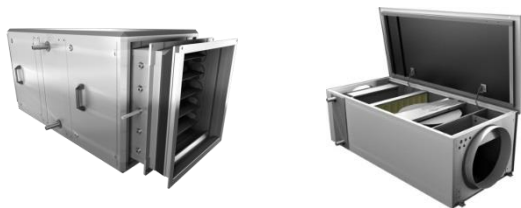




# Revision of EU-Regulation EU/1253/2014

## Scope of products

UVU's with air treatment **LOT 6** UVU's without air treatment



**LOT 11** Fans





# Revision of EU-Regulation EU/1253/2014

## Scope of products

UVU's with air treatment **LOT 6**  
SFP int /  ~~$\eta_v$~~ <sub>u</sub> / Filter correction  
matched to BVU



UVU's without air treatment **LOT 11** Fans  
→ products "conveying air without air treatment"

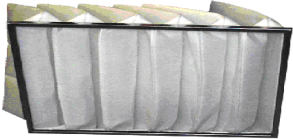


# Revision of EU-Regulation EU/1253/2014

## Revision input – extract from EVIA 2020 revision matrix



- **Historic / listed buildings, Repair & Replacement, Refurbishment**  
Exceptions are necessary if limited room possibilities do not allow installation of ecodesign – ready ventilation units



- **Filter correction**  
Harmonized in between UVU's and BVU's, considering new ISO 16890 and filtration level



- **Dual use**  
keep exclusion on VSD drive, keep drafts on motor requirements EU/640/2009 and fan requirements EU/327/2011, exclusions necessary?

# Revision of EU-Regulation EU/1253/2014

## Revision input – extract from EVIA 2020 revision matrix



Source: World climate.com / VELUX AS

- **Climatic aspects**  
in which ambient conditions highly efficient HRS are useful? Impact of climatic zones, cold, enthalpy, frost protection → higher  $\Pi_{th}$  requirements are not useful in the regular and warmer zones of Europe (Study Campus Birkenfeld / Prof. C. Kaup)
- And many other items!



**Holger Thamm, Stiebel Eltron**  
EVIA Residential Ventilation Working Group

**EVIA's position on Lot 6**

# Revision of EU-Regulation EU/1253/2014

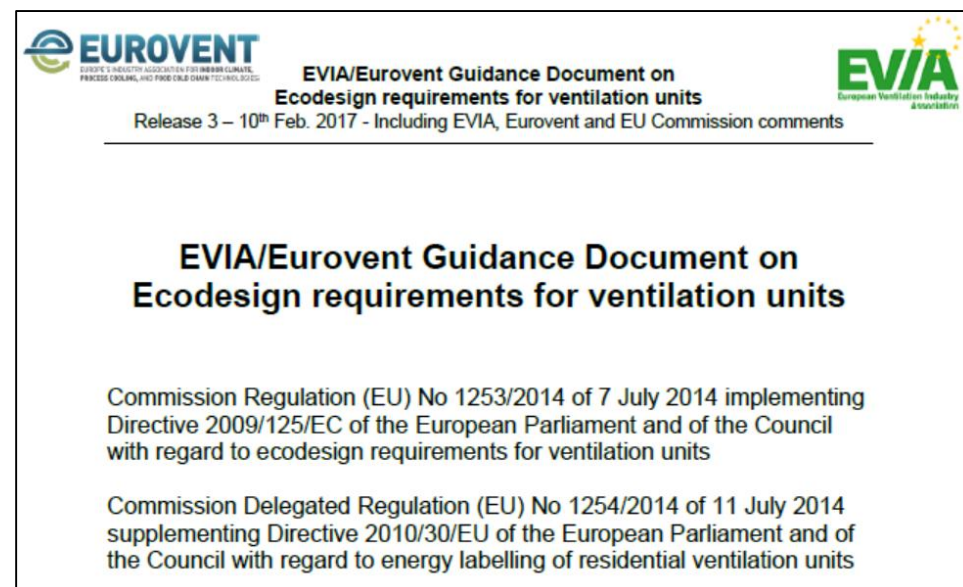
## Updating technical issues

### Include clarification aspects within published FAQs

- The FAQs drafted by the industry and the European Commission identify problematic aspects and propose solutions which should be considered in the revision

### Current status of EN 13142, EN 13141 should be considered as the basis of future revisions

- These standards have been developed to clarify current regulation and also include further options. In particular aspects of pressure:
  - control factors (CTRL = 0,5 single room control),
  - infiltration (Misc-Factor) considering differences of Exhaust and bidirectional system.





# Revision of EU-Regulation EU/1253/2014

## Updating Energy-Label

### **Climatic zones should be considered in the Label**

- The thermal aspect of ventilation is based on climatic conditions. The use of average climate only can be misleading.
- Based on the current information on the label, a differentiation regarding climatic zones will not add any new information. Instead, adding “annual heating saved (AHS)” should be considered.

### **Information on IAQ parameters and filters in the label**

- Next to energy-efficiency, ventilation systems have the potential to provide a good IAQ.
- The additional advantage of better filtration in heavily polluted areas is not yet visible.

# Revision of EU-Regulation EU/1253/2014 “multifunctional bidirectional ventilation”

European Platform for Multifunctional Units: EHI, EHPA, EPEE, Eurovent and EVIA

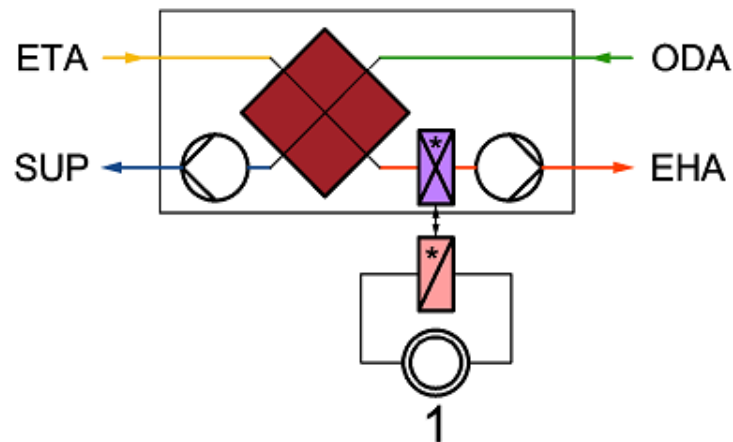
## Clarify definition and scope

- Functions of ventilation, heating and hot water production may be combined in one multifunctional product
- The concept of “**multifunctional bidirectional ventilation**” is touched within EU/1253/2014 (Ventilation), (EU) 206/2012 (AC and Comfort Fans) and (EU) 813/2013 and 814/2013 (Heaters and Hot Water Heaters)
- From a ventilation perspective, multifunctional bidirectional ventilation units are best placed in EU/1253/2014
- Calculation based on EN 16572: *“Ventilation for Buildings - Performance testing of components for residential buildings - Multifunctional balanced ventilation units for single family dwellings, including heat pumps”*

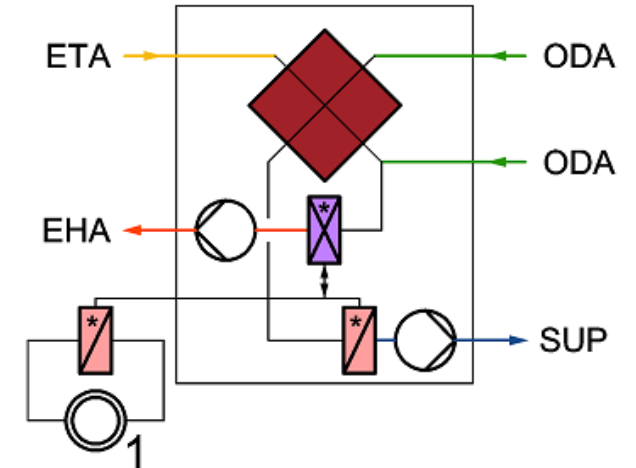
## Revision of EU-Regulation EU/1253/2014 “multifunctional bidirectional ventilation”

- Multifunctional units may include only one exhaust air fan or may include both exhaust air and supply air fans. In addition, multifunctional units include one or several additional functions, such as heating and/or cooling and/or domestic hot water production etc.

- + air to air heat exchanger
- + Air to water heat pump for domestic hot water production



- + air to air heat exchanger
- + Air source heat pump for:
  - supply air heating or cooling
  - for alternative:
    - hydronic heating or cooling
    - domestic hot water production



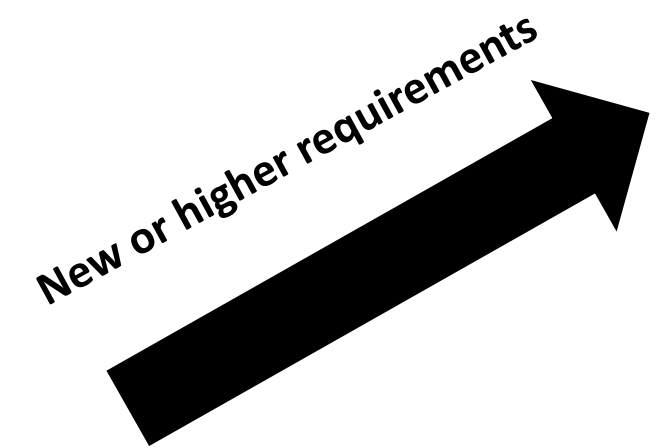
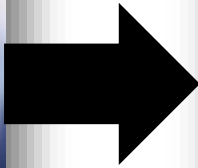


**Martin Lenz, Trox**  
Chair of Eurovent AHU product group

**Eurovent's position on Ecodesign regulations**

## Eurovent Position – Clarification of current regulation

- Scope (process ventilation, heat pumps etc.)
- Historical buildings with limited space
- Filter correction
- Recirculation
- Duty point





# Eurovent Position – Things to be handled in update

## Definitely

(according to article 8)

Energy efficiency of filters



Leakages



*New tiers*

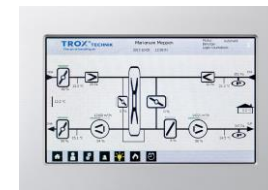
Electrical efficiency ( $SFP_{INT}$ )

Thermal efficiency (if useful)



## Additional approaches

Controls



Humidity efficiency



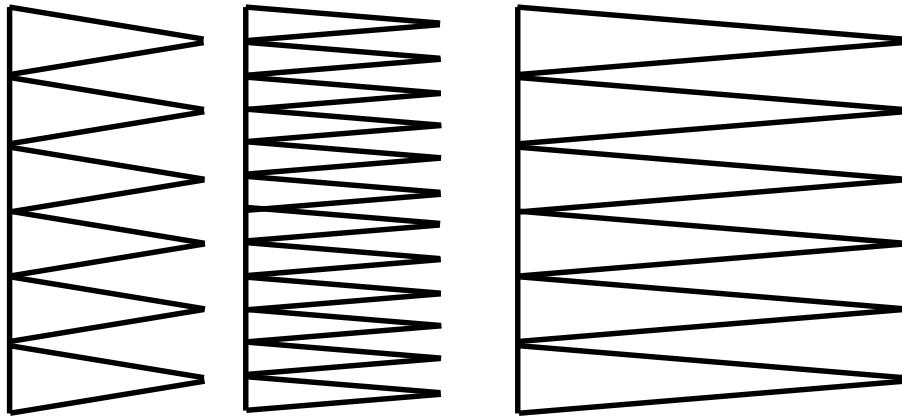
Consideration of freezing



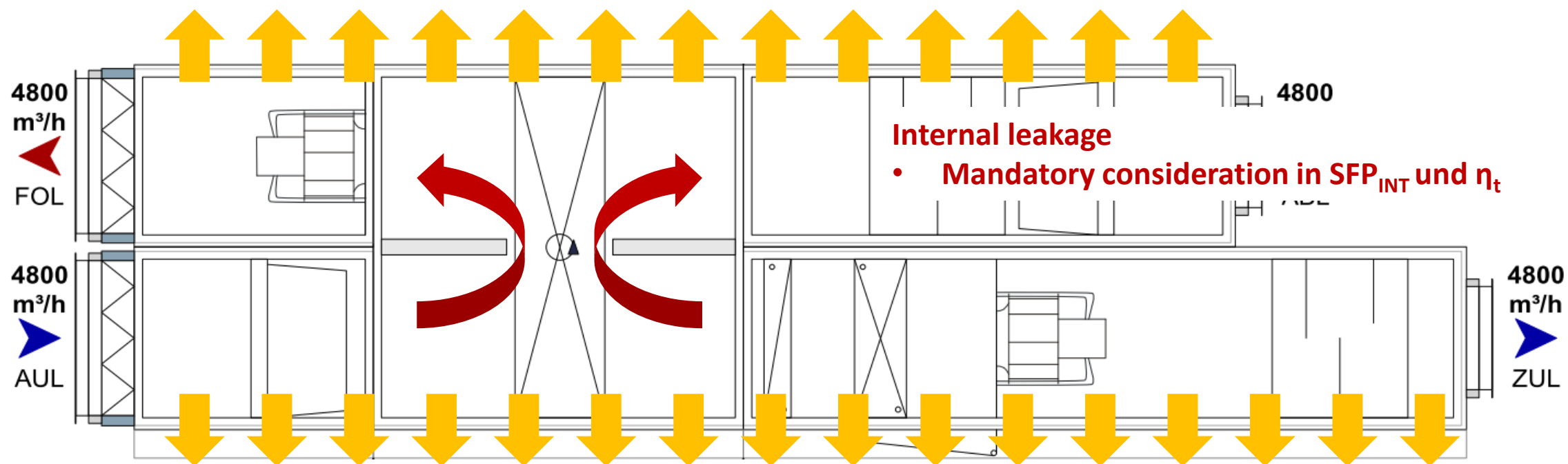
## Eurovent Position – Energy efficiency of filters

Limitation of filter media velocity

- Already included in standardization (EN 13053)
- Not perfect but good enough for a first step
- Easy market surveillance
- Leads to better energy efficiency in combination with SFPint



## Eurovent Position – Leakage



Internal leakage

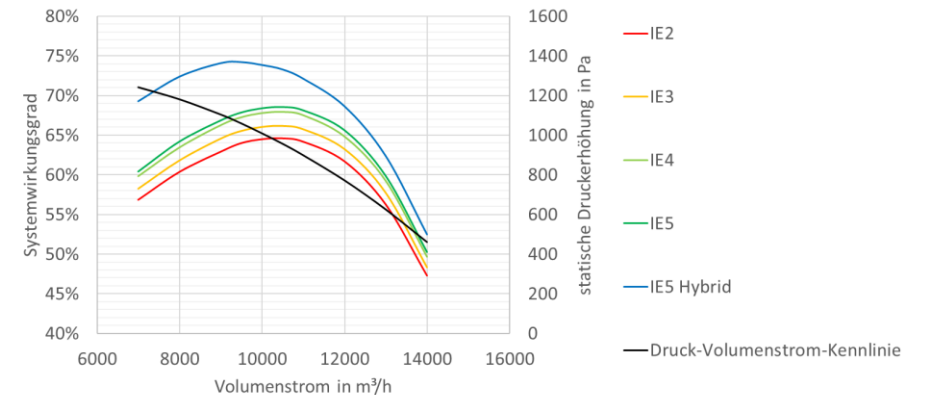
- Mandatory consideration in  $SFP_{INT}$  und  $\eta_t$

External leakage

- Min. leakage class according 1886 L3(R)

## Eurovent Position – Further tier

- Keep requirement for thermal efficiency at the same level
- Increase of the requirements for SFP<sub>int</sub> and fan efficiency (similar adjustment as planned for fan regulation (327))



## Eurovent Position – Humidity recovery

- High influences on the efficiency of an AHU in many European regions
- Different approaches how this can be handled
- Eurovent position still not finally decided

### Option 1 – definition of $\eta_e$ and regulation of this

$$\eta_e = \eta_t + c \eta_x$$

$\eta_e$ :	Energy efficiency
$\eta_t$ :	Sensible efficiency
$\eta_x$ :	Latent efficiency (summer)
$c$ :	Conversion factor

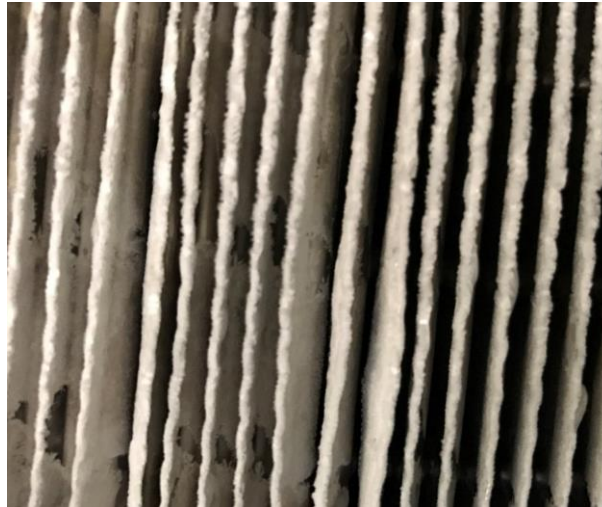
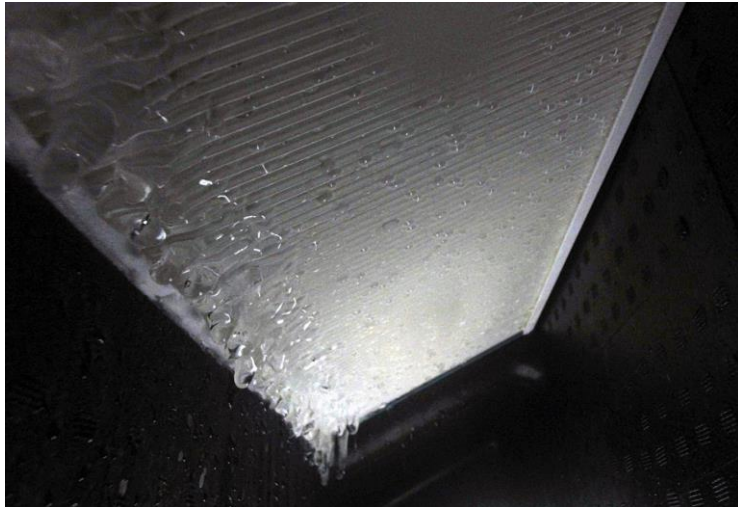
### Option 2 – give a bonus to the $SFP_{lim}$

$$SFP_{Lim} = \text{---} + E + H$$



## Eurovent Position – Consideration of freezing

- At least there should be a mandatory information on the printout about the energy demand for frost protection



## Eurovent Position – Controls

- High impact on efficiency (minimum as important as efficiency of single components)

Main question: What can be useful handled within a regulation?

Possible requirements (still not fully fixed):

- Demand controlled fan speed
- Demand controlled thermal capacity
- Monitoring of defined values
- Frost protection function
- Etc.

(BTW: EPBD also requires things like smart readiness, energy monitoring etc.)





**Any questions ?**



*Ventilating Europe*