

## Eurovent input for Release 3 of the EVIA/Eurovent Guidance Document on Ecodesign requirements for ventilation units

### In a nutshell

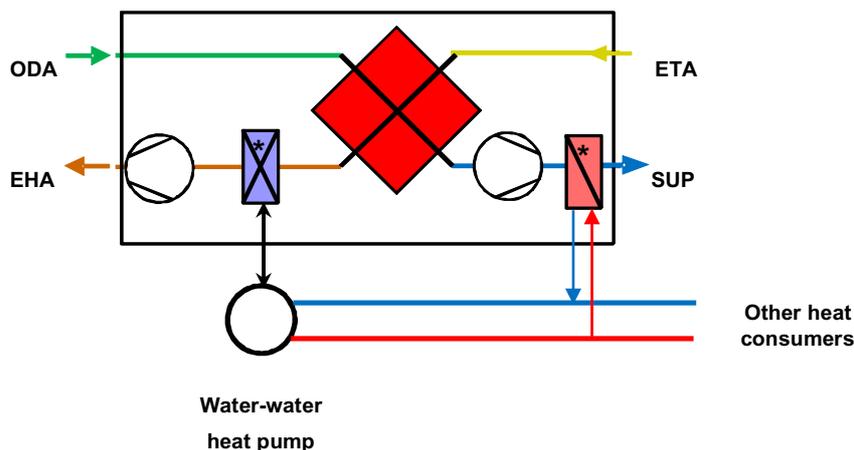
With this paper, Eurovent provides input for an updated version (Release 3) of the EVIA/Eurovent Guidance Document on Ecodesign requirements for ventilation units. The content provided within this paper results from various meetings of the Eurovent Ventilation Unit Taskforce, during which also an EVIA representative took place. The content remains to be discussed by the respective committees within EVIA. Eurovent looks forward to further developing the joint Guidance Document.

### Modifications to the current Guidance Document (Release 2)

#### E104: Which ventilation units are not in the scope?

1. Eurovent proposes to add a figure (6a) of a unit with heat pump to the table.

#### Unit design



#### Comments

The water-water heat pump is connected to a cooling coil in the exhaust air and generates heat. The heating coil in the ventilation unit is connected to heating pipes of the heat pump. The surplus of the generated heat is supplied to other heat consumers in the building. A typical example is a swimming pool, in which case, over the season, the surplus of generated heat exceeds the heat demand of the heating coil.

#### Answer

In case some of the recovered heat is being used for other consumers, then the unit should be included into EU Regulation 1253/2014.

2. The equations for unit design number 4 on page 12 of the guidance document need to be corrected or deleted

E117: Is it possible to install one UVU for supply and one UVU for exhaust in a building or part of a building?

Eurovent requests this section to be extended with the following text, which is based on an official answer by the European Commission:

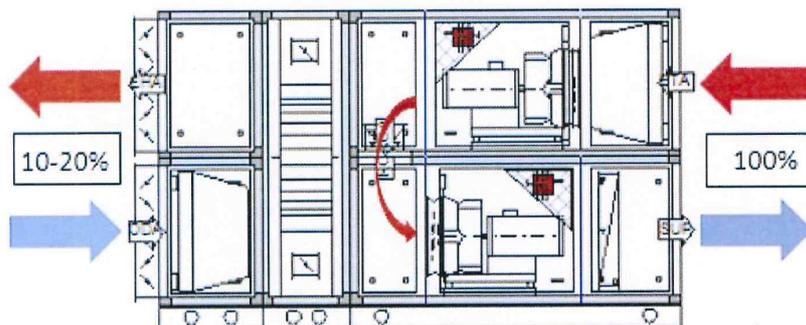
If the whole ventilation unit is designed, manufactured and delivered under the approach that it is a BVU (in line with the relevant definitions given in the Regulations), it derives that it should be considered as a BVU. Therefore, the energy label and the compliance with the ecodesign requirement should be evaluated accordingly. If several different components, among which various UVUs, are assembled on site (into a ventilation system), and each UVU is delivered separately, and capable to work independently from the others, in this case each UVU should be assessed separately.

Q6: What is meant by 'toxic, highly corrosive or flammable or in environments with abrasive substances', Article 1 (f), (v)?

Clarify that only ventilation units within the production process are excluded, and not any other units (for example: a ventilation unit for the office has to comply with the regulation).

Q11: Are products designed for recirculation considered as ventilation units?

Eurovent regards the following additions to this question as necessary in order to bring further clarity to the document.



One of the following options may be applicable

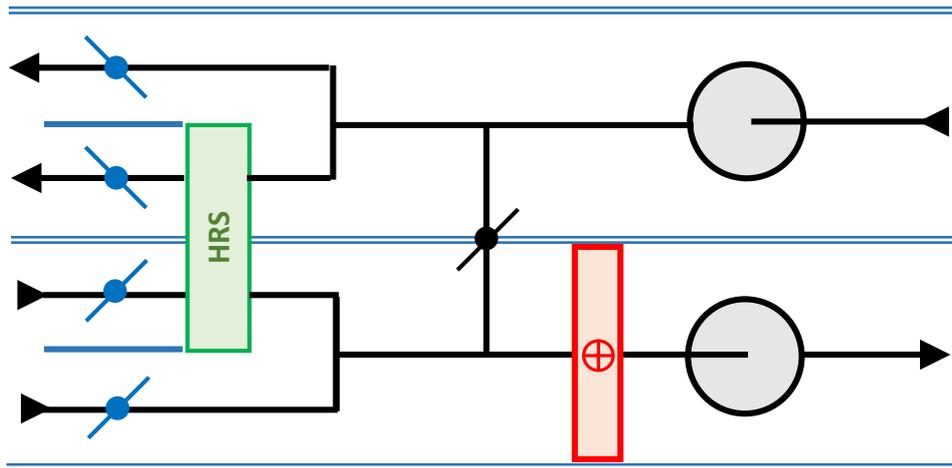
- 1) The amount of outdoor air is always lower than 10 % of the total air flow. The unit is not in the scope of EU 1253/2014.  
The technical specification shall include the following statement:  
***"This unit is designed for a maximum amount of outdoor air of  $xy \text{ m}^3/\text{s}$ ".***
- 2) The amount of outdoor air for winter design condition (ventilation demand) is lower than 10% of the total air volume flow. Heat recovery is not necessary.  
The technical specification shall include the following statement:  
***"This unit is designed for a maximum amount of outdoor air of  $xy \text{ m}^3/\text{s}$  during winter design condition".***  
Higher outdoor flows at higher outdoor temperatures, intended for free cooling, shall not require any additional heating.
- 3) The amount of outdoor air is between 10 % and 100%. Heat recovery is mandatory.  
The technical specification shall include the following statement:  
***"This unit is designed for a maximum amount of outdoor air of  $xy \text{ m}^3/\text{s}$  during winter design condition".***  
The heat recovery component shall fulfil the efficiency requirement at winter design conditions. The temperature efficiency at winter conditions shall be used in the efficiency

bonus calculation. The bypass facility, if any, shall be designed for the maximum outdoor air volume flow and the pressure drop over the bypass shall not exceed the pressure drop across the heat recovery.

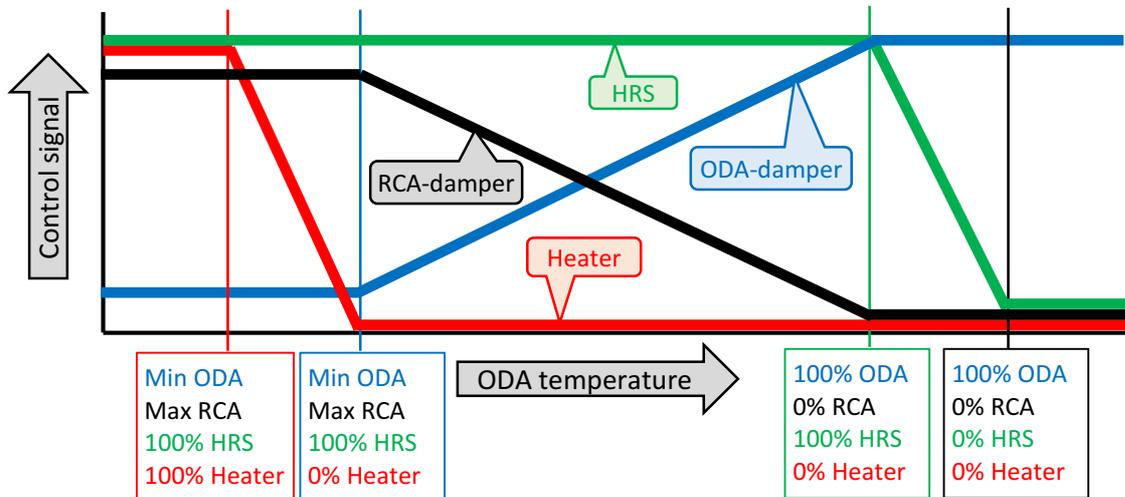
Higher outdoor flows shall not require additional heating.

A typical design sketch with associated control scheme is shown below.

- Sketch of unit with variable outdoor air flow



- Control strategy for unit with variable outdoor air flow



$SFP_{int}$  shall be calculated with:

- The initial pressure drop across the F7 filter at maximum outdoor air volume flow
- The maximum pressure drop across the heat recovery (at design air volume flow during winter time or maximum outdoor air volume flow in case of no bypass facility)
- The pressure drop in the unit in- and outlet opening (where applicable) at design air volume flow of the fan
- The static efficiency of the fan in the unit at design air volume flow

## Comment

The equations for unit design number 4 on page 12 of the guidance document need to be corrected or deleted!

**Q21: How can manufacturers handle filters, if they are different to the reference condition? Like a F9 filter instead of a F7 Filter?**

Eurovent proposes to apply the filter corrections as described below, in case the installed filter deviated from the reference configuration.

### 1. Filter correction in the exhaust of a BVU

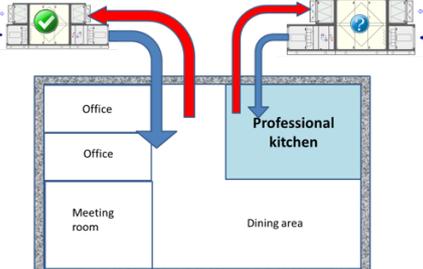
- The filter has a different class than M5.
- Ignore the initial pressure of the installed filter.
- Select an appropriate M5 filter that merely substitutes the installed filter for calculation purposes.
- The M5 filter type has to fit in the original filter section length and has to be a selectable option in the AHU selection software.
- Assess the  $SFP_{int}$  value with the initial pressure drop of the selected M5 filter.

### 2. Filter correction in the supply of a BVU

- The filter has a different class than F7.
- Ignore the initial pressure of the installed filter.
- Select an appropriate F7 filter that merely substitutes the installed filter for calculation purposes.
- The F7 filter type has to fit in the original filter section length and has to be a selectable option in the AHU selection software.
- Assess the  $SFP_{int}$  value with the initial pressure drop of the selected F7 filter.

## Questions and proposed answers on issues not yet covered by the joint Guidance Document (to be added in Release 3)

Context	Question	Proposed answer
EN308		<p>Eurovent holds that EN308 shall not be used for residential applications. EN308 is a testing standard for energy recovery components. The standard for residential ventilation units is EN13141-7.</p> <p>The document should account for this and respective references to EN308 are to be deleted.</p>
RAC system	<i>How to calculate HRS Efficiency of RAC system with unbalanced air flow according ErP 1253</i>	If the air flows are not balanced and no specific HRS values are available, the values may be calculated by the empirical equation (proposed in draft of EN 13053):

	<p>into an equal air flow condition?</p>	$\eta_{t\ 1:1} = \eta_t * \frac{1 + \frac{m_2}{m_1}}{2}$ <p>where</p> <p><math>\eta_{t\ 1:1}</math> supply air dry temperature ratio at balanced mass flows</p> <p><math>\eta_t</math> supply air dry temperature ratio at actual mass flows</p> <p><math>m_2</math> supply air mass flow in kilogram per second (kg x s<sup>-1</sup>)</p> <p><math>m_1</math> extract air mass flow in kilogram per second (kg x s<sup>-1</sup>)</p> <p>The equation is mainly intended for run around coils systems (RAC).</p> <p>Equation is valid for ratio supply air mass flow by extract air mass flow between 0.67 and 1.5. If ratio is out of limits; use 0.67 respectively 1.5 in the correction.</p>
<p><b>AHU serving a professional kitchen</b></p>	<p><i>Is the kitchen unit subject to the Regulation EU 1253/2014?</i></p>	<p>Yes, because it is not a professional range hood, but a bi-directional ventilation unit (BVU).</p> <p>If part of the supply air is extracted through a range hood, evaluate the BVU as a BVU with unequal airflows.</p> 
<p><b>Supply unit and exhaust fan serving a professional kitchen</b></p>	<p><i>Is the unit supplying the professional kitchen subject to the Regulation?</i></p>	<p>Yes, and it is a UVU (SFPint &lt;250).</p>