**JIEG Comments on Ecodesign Lot 6 VENTILATION**
29 April 2013

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Draft Working Document Ventilation Units - Version 11.4.2013
Annex II: Ecodesign Requirements for NRVU
2. Specific Ecodesign requirements

**Comment on heat recovery requirements:**

The drafted specific requirements do not reflect the aspects of the different heat recovery technologies. The minimum requirements for thermal efficiency shall be defined for category I, II and III according EN 308 and EN 13053:

- Category II: Systems with intermediary medium (run-around coils, etc.
- Category I: Recuperative systems (plate exchanger with cross or counter flow) including plate exchanger with humidity transfer.
- Category III: Regenerative systems (rotors, alternating systems)

These three groups are already defined in EN 308 and EN 13053

The JIEG agrees on the efficiency bonus in the Draft WD as a basis for calculation hereafter referred to as E.

**Proposal:**

The JIEG proposes the following requirements for Tier 1

- the minimum thermal efficiency $\eta_{t\_nrvu}$ of recuperative (e.g. plate and counterflow) HRS shall be 65 %, the efficiency bonus E = ($\eta_{t\_nrvu}$ - 0,65)*3000 if the thermal efficiency $\eta_{t\_nrvu}$ is at least 65 % else E = 0;
- the minimum thermal efficiency $\eta_{t\_nrvu}$ of recuperative with intermediary heat transfer (e.g. run-around coils) HRS shall be 63 %, the efficiency bonus E = ($\eta_{t\_nrvu}$ - 0,63)*3000 if the thermal efficiency $\eta_{t\_nrvu}$ is at least 63 % else E = 0;
- the minimum thermal efficiency $\eta_{t\_nrvu}$ of regenerative (e.g. rotary) HRS shall be 67 %, the efficiency bonus E = ($\eta_{t\_nrvu}$ - 0,67)*3000 if the thermal efficiency $\eta_{t\_nrvu}$ is at least 67 % else E = 0;

The JIEG proposes the following requirements for Tier 2

– the minimum thermal efficiency $\eta_{t\_nrvu}$ of recuperative (e.g. plate and counterflow) HRS shall be 70 %, the efficiency bonus E = ($\eta_{t\_nrvu}$ -0,70)*3000 if the thermal efficiency $\eta_{t\_nrvu}$ is at least 70 % else E = 0;

- the minimum thermal efficiency $\eta_{t\_nrvu}$ of recuperative with intermediary heat transfer (e.g. run-around coils) HRS shall be 68 %, the efficiency bonus E = ($\eta_{t\_nrvu}$ -0,68)*3000 if the thermal efficiency $\eta_{t\_nrvu}$ is at least 68 % else E = 0;
- the minimum thermal efficiency $\eta_{t\_nrvu}$ of regenerative (e.g. rotary) HRS shall be 73 %, the efficiency bonus E = ($\eta_{t\_nrvu}$ -0,73)*3000 if the thermal efficiency $\eta_{t\_nrvu}$ is at least 73 % else E = 0;

This proposal might also be mentioned in the latest Swedish position paper.

**Justification:**

- Every heat recovery system has its special benefits which are needed in the market.
- The regulation shall not hinder the access in the market nor shall give argumentation on selection.
- In NR application the designing engineer selects the suitable system according the individual requirements.
- For each system ambitious levels have been proposed, considering their individual performance.

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**Comment on fan efficiency:**

The definition of minimum fan efficiency for bidirectional units is a double regulation or even triple regulation for the fan inside the ventilation unit.

**Proposal:**

The aspect of the fan efficiency must be deleted for bidirectional ventilation units.
The SPF requirement is sufficient in the sense of the regulation

**Justification:**

- Fans inside a bidirectional ventilation unit have to comply with fan regulation EU 327/2011.
- The $SFP_{INT}$ approach considers the two aspects of pressure drop and fan efficiency ($SPF = \Delta p/\eta_{Fan}$)
- If one of these parameters is further defined ($\eta_{Fan}$), then also the other is automatic defined ($\Delta p$).
- This would be contrary to the benefits of $SFP_{INT}$ approach.
  - Designer flexibility
  - Space requirements (compensation of higher pressure by a better fan)
- To reach ambitious SFP levels you are anyway forced to use a very efficient fan system in your unit.

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**Comment on definition of minimum requirements of $SFP_{INT}$:**

The existing proposals do not meet the product requirements for all types and designs of a ventilation unit.

The SFP approach must consider:

- The type of heat recovery:
  - Systems with intermediary medium
  - Recuperative
  - Regenerative
- The size of the unit (scaling factor) considering
  - Compact units
  - Taylor made units
  - Flat units
- The velocity inside the unit

The JIEG disagrees with the proposed formulas for minimum SFP requirements.

The JIEG agrees on the efficiency bonus E as a basis for calculation: $E = (\eta_t - \eta_{t,min}) * 3000$.

**Proposal:**

There is a need for further calculations to give provide ambitious levels for all types. The proposals will be based on the existing proposals.

The JIEG will provide a modified approach 7th of May.

**Justification:**

The scaling impact is different for the different designs of a ventilation unit.