



# NEW EU REGULATION 1253/2014 regulates energy consumption of ventilation systems

***The European Commission has determined requirements in the directive 2009/125/EG for the energy consumption of products regarding ecological design. The goal of this directive is to realise a considerable saving on the energy consumption and therewith a reduction of CO<sub>2</sub> emissions. This has resulted in the establishment of regulation 1253/2014, which imposes requirements for the ecological design of ventilation units. These requirements have come into force on January 1<sup>st</sup> 2016 and will be further defined by January 1<sup>st</sup> 2018.***

## **Ecodesign**

The new regulation 1253/2014 for ventilation products determines that units for heated rooms with balanced ventilation need to include heat recovery. Earlier, ecodesign already resulted in Energy related Products (ERP) regulations for electrical motors (640/2009) and fans (327/2011).

The goal of ecodesign is to save more than 4,1 billion GJ of energy. As a result, 233 million tonne of CO<sub>2</sub> emissions can be saved per year. In comparison, this amount equals what a forest as large as 5.5 times a country like The Netherlands can absorb per year.

This regulation is part of the CE mark and is not applicable to ventilation units for rooms with explosive or toxic air or air with extreme temperatures.

The new regulation is applicable to the following ventilation units:

- Residential ventilation units (RVU): ventilation units with a maximum air flow of not more than 250m<sup>3</sup>/h or with a maximum air flow between 250 and 1000 m<sup>3</sup>/h, which according to the producer are exclusively intended for residential ventilation.

- Non-residential ventilation units (NRVU): ventilation units with a maximum air flow of more than 250 m<sup>3</sup>/h, or with a maximum air flow of the ventilation unit between 250 and 1000 m<sup>3</sup>/h, which according to the producer are not exclusively intended for residential ventilation.
- Ventilation units (VU): these are electrical devices equipped with at least one impeller, one motor and one cabinet that are intended to replace polluted air with outdoor air in a building or part of a building.
- Unidirectional ventilation units (UVU): ventilation units that produce a flow in only one direction; from indoors to outdoors (exhaust air) or from outdoors to indoors (supply air), where the mechanical produced air flow is compensated by natural air supply or exhaust.
- Bidirectional ventilation units (BVU): ventilation units that produce a flow from inside to outside and vice versa and that are equipped with both exhaust and supply fans.

## Consequences

From 2016 on, balanced ventilation systems for heated room (NRVU's) need to be equipped with heat recovery, like a heat wheel (HW) or a plate heat exchanger (PHE). In case of flows that are strictly separated from each other or flows that physically are not allowed to come together, a twin coil system should be installed.

All fans must be equipped with a multi-speed drive or a variable speed drive. The energy consumption of the fans is limited in relation to the heat recovery efficiency. The HRS must also have a thermal by-pass facility.

Heat recovery	Efficiency dry		SFP <sub>int</sub> W/(m <sup>3</sup> /s)	
	2016	2018	2016	2018
Twin-coil	63%	68%	1.400	1.300
PHE/HW	67%	73%	900	800

The consequences of this new regulation are that:

- Air treatment devices will become larger and will occupy more floor area (10 to 20%).
- Existing systems can hardly be replaced one-to-one anymore, but can still be renovated or adapted.
- Clients should clearly specify what they would like to have.
- The provided product information of the supplier to its customers will be more extensive.
- The supplier should declare with a DOP statement (DOP = Declaration of Performance) what the supplier is delivering.

The technical consequences of this new regulation are that:

- All ventilation units, with the exception of units for dual use, are equipped with a drive with different speeds or a drive with a variable speed.
- All BVU's feature a HRS (Heat Recovery System).
- The HRS is equipped with a thermal by-pass.
- The minimum thermal efficiency  $\eta_{\tau_{RVU}}$  of all HRS with exception of circulation HRS in RVU amounts 67%.
- The minimum thermal efficiency  $\eta_{\tau_{RVU}}$  of circulation HRS in BVU's amounts 63%.
- There are minimum efficiency requirements for the fans for UVU's ( $\eta_{VU}$ ) that:
  - Amount 6.2 % \* ln(P) + 35.0 % if P ≤ 30 kW, and
  - Amount 56,1 % if P > 30 kW;
- The maximum of internal specific fan power of ventilation parts (SFP<sub>int, limit</sub>) amounts in W/(m<sup>3</sup>/s):
  - For a BVU with circulation HRS:
    - 1 700 + E – 300 \*  $q_{nom}/2$  – F if  $q_{nom} < 2$  m<sup>3</sup>/s, and
    - 1 400 + E – F if  $q_{nom} \geq 2$  m<sup>3</sup>/s
  - For a BVU with another HRS:
    - 1200 + E – 300 \*  $q_{nom}/2$  – F if  $q_{nom} < 2$  m<sup>3</sup>/s, and
    - 900 + E – F if  $q_{nom} \geq 2$  m<sup>3</sup>/s
  - 250 for an UVU intended to be used with a filter.