To:
ENTR Lot 6 – Air Conditioning and Ventilation Systems
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Ecodesign requirements on air handling units
Common Nordic proposal based on specific fan power

General

Air handling units (AHU) can be declared against a requirement on specific fan power (SFP) for a standardized model configuration, which not necessarily conforms to the exact configuration of the real supplied unit. According to this model, SFP is calculated at a reference airflow applied for different calculated external static pressures. In this SFP calculation, only those components are included that are necessary for the ventilation function of the AHU.

The method is expected to promote AHU with low internal pressure drops. By applying SFP, we connect directly to the energy use of the ventilation system, and we obtain a motivated requirement.

For manufacturers of ventilation products, SFP is a well-known concept, and it is used for energy requirements on ventilation components in a plurality of European countries. A similar method can be used also for fan units.

Components included in the SFP calculation (including modules necessary for their functions)

- Supply air filter class F7
- Extract air filter class G5
- Heat recovery unit*
- Fans for supply and extract air

*) In the complete requirement on AHU, requirements should be included on the dry temperature efficiency of the heat recovery unit. Heat recovery implies/gives a considerable decrease in energy use, but the SFP value increases with increased temperature efficiency. A requirement on temperature efficiency is necessary for optimization of the energy use.

Reference airflow

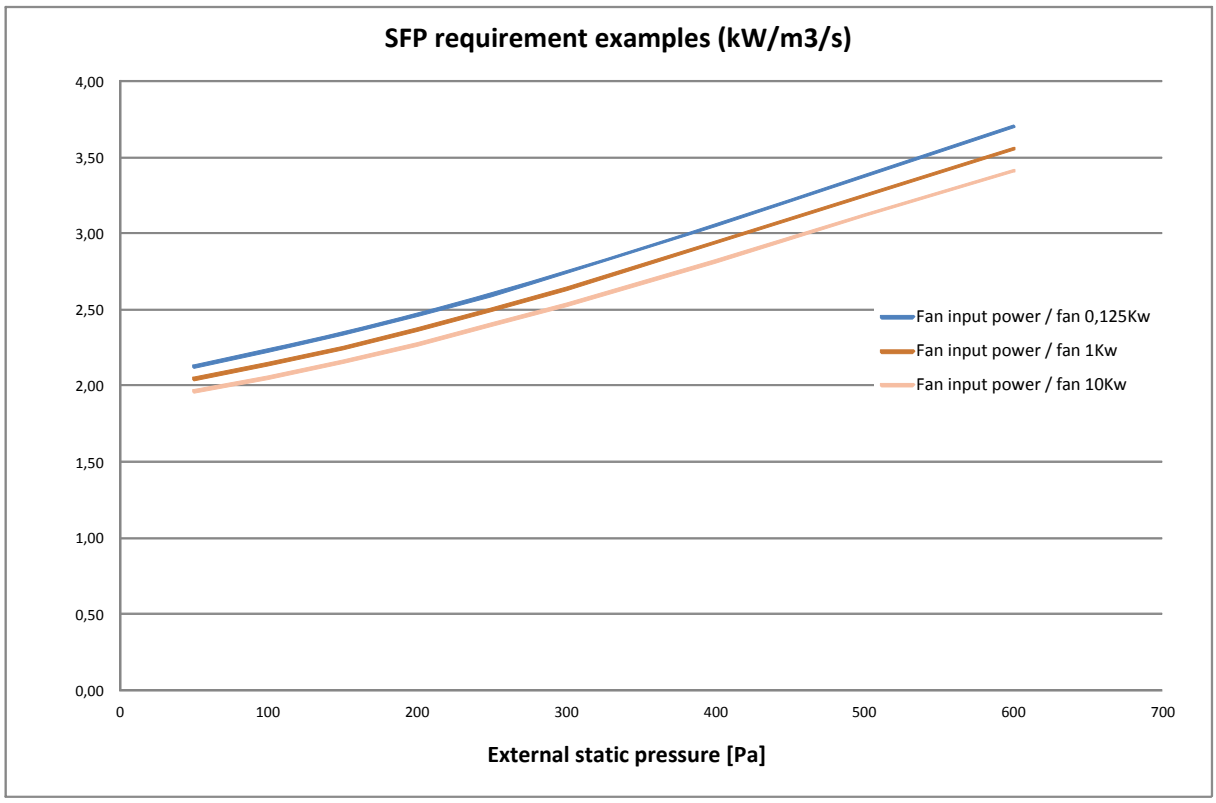
Depending on the AHU design provisions, the reference working point is defined in one of the following ways.

1. General reference working point
   For AHU not designed for a specific working point, the reference working point is calculated at 70 % of the maximum airflow. If not stated, the maximum airflow is defined as the airflow at maximum AHU speed and 100 Pa** external pressure drop. SFP is calculated in the operating pressure at the reference working point recommended by the manufacturer.
   **) If the AHU is not designed for pressures ≥100 Pa, its maximum design pressure applies.

2. Specific reference working point
   For AHU designed for one or more specific working points, the reference working point is the working point at which the AHU will be mainly used.

SFP requirement

We propose an SFP requirement looking as the attached example diagram. The requirement could be based on the same principle as the requirement on fans in Lot 11, but with compensation for expected pressure losses in the AHU (one can easily prove that SFP is the ratio between the sum of pressure drops and the overall efficiency of the fan). The exact mathematic function forming the limits should be defined at a later stage. In order to generally promote energy efficiency, it is reasonable that the calculation model includes mitigation for working points at lower pressure.



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