

Section 10 Air distribution systems

This section outlines the minimum provisions needed to comply with Part L when air distribution systems are provided in new build and in existing buildings.

10.1 Scope of the guidance

The guidance in this section applies to the following types of air handling systems:

- Central mechanical ventilation – including heating, cooling and heat recovery
- Central mechanical ventilation with heating and cooling
- All central systems not covered by the two points above
- Local ventilation only units within the local area, such as window/wall/roof units, serving one room or area
- Local ventilation only units remote from the area, such as ceiling void or roof-mounted units serving one room or area. This also includes fan assisted terminal VAV units where the primary air and cooling is provided by central plant
- Other local units, e.g. fan coil units.

Gas- and oil-fired air heaters installed within the area to be heated are not within the scope of this section.

10.2 Definitions

Specific fan power of an air distribution system

The specific fan power of an air distribution system (SFP) is defined as the sum of the design total circuit-watts, including all losses through switchgear and controls such as inverters, of the fans in the system that supply air and exhaust it back to outdoors (i.e. the sum of the total circuit-watts for supply and extract fans), divided by the design air flow rate through that system.

For the purpose of this guide, the specific fan power of an air distribution system should be calculated according to the procedure set out in Annex D 'Assessing the Power Efficiency of Fans and Air Handling Units – Calculating and Checking the SFP_v ' of Draft prEN 13779, April 2005, 'Ventilation for Non-Residential Buildings – Performance Requirements for Ventilation and Room-Conditioning Systems'. Note, however, the definition includes power losses through switchgear and controls, as in Equation 11:

$$SFP = \frac{P_{sf} + P_{ef}}{q} \quad \text{Equation 11}$$

where SFP is the specific fan power demand of the air distribution system (W/(litre/s))

P_{sf} is the total fan power of all supply air fans at the design air flow rate including power losses through switchgear and controls associated with powering and controlling the fans (W)

P_{ef} is the total fan power of all exhaust air fans at the design air flow rate including power losses through switchgear and controls associated with powering and controlling the fans (W) and

q is the design air flow rate through the system, which should be the greater of either the supply or exhaust air flow (litre/s).

Specific fan power of an individual fan

The specific fan power of an individual fan, SFP_v , is defined as in Equation 12:

$$SFP_v = \frac{P_{mains}}{q_f} \quad \text{Equation 12}$$

where P_{mains} is the power supplied to the fan (W) and q_f is the airflow rate through the fan (litre/s).