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New UK Building Regulations and Specific Fan Power (SFP)

1. The new 2006 UK Building Regulations provide technical guidance for UK buildings and specifically the 2006 amendment to Part L of Schedule 1 specifies the need to provide energy efficient fixed building services, with effective controls. The Government has published practical guidance on ways of achieving compliance that makes reference to Specific Fan Power (SFP). This Product Information is issued to aid better understanding of this subject.

2. Further data can be obtained from:-

www.communities.gov.uk and www.planningportal.gov.uk/approveddocuments

Refer :-

The Building Regulations Approved document F

The Building Regulations Approved documents L1A, New Dwellings.

The Building Regulations Approved documents L1B, Existing Dwellings

The Building Regulations Approved documents L2A, New Buildings other

The Building Regulations Approved documents L2B, Existing Buildings

The Building Regulations Non – domestic heating, cooling and ventilation compliance guide. May 2006.

3. Refer document F
Page 6 “consideration should be given to mitigation of ventilation energy use where applicable, by employing heat recovery devices, efficient types of motors and/or energy saving control devices in the ventilation system.”

Pages 10+ provides guidance on ventilation rates for dwellings and buildings other than dwellings.

4. Refer document L2A Conservation of fuel and power in new buildings other than dwellings.
Page 18 “reasonable provision for the performance of air handling plant would be to follow the guidance in the Non domestic heating, cooling and ventilation compliance guide in providing: a. suitable efficient air handling plant: and b. effective control systems.”

Page 19 “... the system should be capable of achieving a specific fan power at 25% of design flow rate no greater than that achieved at 100% design flow rate. Reasonable provision for ventilation system fans rated at more than 1,100 Watts would be to equip them with variable speed drives.”

“The guidance is not applicable to smoke control fans and similar ventilation systems only used in abnormal circumstances.”

5. Refer doc “ Non domestic heating, cooling and ventilation compliance guide.” May 2006

Page 11, 12, defines the SFP values that apply to differing systems for New buildings and Existing buildings.
 Typical maximum permissible SFP (Watts / (litre/s))

	New Build	Existing Build
Central mechanical ventilation inc heat, cool, + heat recovery	2.5	3.0
Central mechanical ventilation with heating + cooling	2.0	2.5
All other central systems	1.8	2.0
Local ventilation only units within the local area, such as window / wall / roof units serving one room or area.	0.5	0.5
Local ventilation only units remote from the area such as ceiling void or roof mounted serving one room or area	1.2	1.5

Page 52, separately defines SFP of an air distribution system and the SFP of an individual fan :-

The SFP value for a system is defined as the sum of the total circuit – watts (consumed electrical power) for supply and extract fans, including all losses through switchgear and controls, divided by the design airflow rate through that system. (Watts / (litre / s))

For an individual fan, the SFP is defined by equation

$$SFP_v = P_{mains} / q_f \quad (\text{Watts} / (\text{litre} / \text{s}))$$

Where P mains is the power supplied to the fan (W) and q f is the airflow rate through the fan (litre / s)

6. To calculate the SFP value for a fan we need the following -

a) motor electrical input power and the power consumed by any additional associated control, switchgear etc. Or where used, speed controller electrical input power, and the power consumed by any additional associated control or switchgear etc.

And

b) air volume flow rate.

7. Fläkt Woods have added SFP data for many fans into the Fan Selection Tool (FST) and more will follow in 2007.