

Information for Building Services Consultants

Golden Rules to Ensure Part L Is Met

Ventilate right – the main contractor should build the envelope tight. This will enable the design, specification and sizing of the heating and ventilation system to be carried out with confidence. Fresh air openings in the envelope constitute massive air leakage paths and will ensure buildings fail the air test. Check the envelope area is correct - for obvious reasons.

Answers to the Most Frequently Asked Questions

What BS or EN standards are air leakage pressure tests carried out to?

ATTMA TS1 & BS EN 13829:2001(1) Thermal Performance of Buildings: Determination of air permeability of buildings – Fan pressurisation method.

How can air permeability standards be expressed as air changes per hour – ach at a test pressure of 50 Pascals?

For a moderately sized single storey building which complies with Part L, $Q_{leakage} = <10 \text{ m}^3/\text{h}/\text{m}^2$, the average ventilation rate will be approximately 0.3 ach. The ventilation rate in ach can be approximately estimated as $A/(6 \cdot S)$ ach where A = Area of walls, roof and ground floor and S = area of walls and roof.

What is the heat loss due to air leakage?

$Q_{leakage} = rCp \cdot V \cdot n / 3600 \text{ W/K}$ where rCp heat capacity of air, V volume of building m^3 and n is the ventilation rate in air changes per hour - ach.

What are typical levels of savings in terms of energy usage?

For an industrial building with a floor area of 5000 m^2 , currently built without air tightness considerations; air permeability can be $> 14 \text{ m}^3/\text{h}/\text{m}^2$. This equates to a hole in the roof of approximately 5 m^2 !

If the air permeability can be reduced to $8 \text{ m}^3/\text{h}/\text{m}^2$, which comfortably passes Part L, then the energy saving could equal $> 60,000 \text{ kWh}$ per annum. NOTE. Current best practice for industrial type buildings in regards of air tightness is an air permeability figure of $2 \text{ m}^3/\text{h}/\text{m}^2$.

How can complicated service penetrations be sealed?

Services can be routed through ducts inside the building envelope. Sealing multiple service penetrations is awkward but similar principles to those used to seal penetrations through fire walls and plant room slabs should be used.

How can the flow rate for the air leakage pressure test be specified in terms of the size of the fan?

ATTMA TS1 states that the fan should be able of achieving $> 80\%$ of the required air flow rate at 50 Pascals pressure difference.

HRS Services are able to provide estimation for buildings heat loss associated with uncontrolled ventilation and associated costs and potential savings by altering designs. HRS have close links built up with Sheffield University staff and have access to a vast range of skills and laboratory resources. If HRS and Sheffield University can't help you directly, HRS will certainly offer what advice we can.

