

Under Pressure over Air Tightness Testing?

Target Audience: Builders, Self Builders, Small & Medium Developers, readers of monthly magazines

Purpose of the Article: To educate and inform the target audience about key issues relating to ATT and practical steps to achieve success in the build process.

Since April 2006 it has been a mandatory for all new dwellings to be tested for Air Tightness as part of compliance with Buildings Regulations. It may be a shock to many to learn that from October 31st this year, there will no longer be any leeway in meeting air tightness targets and any dwelling failing to meet the standard (i.e. 10m³ / m² per hour @ 50Pa) will risk not achieving the requirements for a Completion Certificate.

Since 2002, when the government introduced changes to Building Regulations as part of an overall strategy to meet new energy efficiency targets, there has been considerable concern within the domestic construction industry about how new targets will be monitored and enforced. There is also confusion in the industry about what Air Tightness Testing actually measures, who can undertake tests, knowing when a test is required (or not), and what practical steps need to be taken to achieve satisfactory results. This article seeks to clarify these issues.

Air Leakage vs Ventilation

Leakage is the *uncontrolled* movement of air through a dwelling through holes in the building fabric. Ventilation is designed to manage air flow in a *controlled* way, in order to optimise living conditions and minimise energy consumption. The more air that flows in an uncontrolled manner through a dwelling, the less efficient and more costly the heating system becomes, since a primary function of heating systems is to heat the air within the building.

Air Tightness Testing is designed to measure very accurately the rate of flow of air through a building, taking into account a range of factors such as:

- The design air permeability of the structure
- Ambient weather conditions

The lower the recorded score achieved by a building, the greater its efficiency in terms of energy consumption and carbon dioxide emissions. In practical terms this will mean the building requires less fuel to heat and will be easier to create and maintain a comfortable environment for occupants, regardless of the prevailing weather outside.

A good approach for builders is to “Build Tight and Ventilate Right.” It is generally much easier to add ventilation (i.e. controlled air flow) to a building, than to reduce leakage.

To Test or Not to Test

Part L1A of the 2006 Building Regulations is unequivocal about which houses require testing – ALL new dwellings must be tested, although in large developments it is acceptable for a representative sample to be tested as long as the sample meets the required standard and building methods are consistent on the rest of the development. It is for Building Control in each area to decide which houses on a development are chosen for the sample.

There is an alternative approach, which involves using a notional figure of 15m³ / h per m² @50Pa in the design of a house. In practice, however, this requires extremely costly adjustments to other aspects of the design in order for the structure to achieve an overall satisfactory Building Energy Rating (BER). Building Control Officers have already begun to weed out projects that adopt this notional figure, as many have been found to be not making adjustments to other aspects of the design and build during development.

Of course Building Control could, until recently, claim to be as much in the dark as anyone else about the requirements for Air Tightness Testing. There have been so many changes to Building Regulations in recent times that it has been difficult to keep up. Likewise, until April 2006 there wasn't even a requirement for new homes to be ATT. However, since mid 2006, there has been a strong push to train Air Tightness Test Technicians via a Government backed accreditation scheme.

There are now over 200 trained ATT Technicians across the UK, with more under training each month. If you consider that a test typically takes 2-3 hours to complete, each Technician could undertake 30-40 tests per month. Assuming 25% of new builds require testing, this means around 150 technicians are needed to cover the UK – so you should already be able to find someone local to you.

The key thing to look out for is that the person performing an ATT has undertaken the technical and practical training to be accredited by the British Institute for Non-Destructive Testing (BINDT), the body responsible for regulating the training and monitoring of technicians.

Practical Steps to Achieve Air Tightness Standards:

The following may be of use for builders as steps to take to ensure a good result from ATT: In terms of the steps that builders can take to ensure a good result from ATT, the following may be of use:

There are three principal causes of a domestic ATT failure, namely:

1. Poor quality laying of block-work
2. Services access points compromising external walls (e.g. electrics, telecoms)
3. Plumbing entry / exit points poorly sealed

During initial stages of the build, care should be taken to ensure mortar joints are good, both for external and internal facing block and brickwork.

In all areas it is important to pay attention to the quality of joints, and the repair of any breaches from inside the building envelope (i.e. living space) to the outside, especially where the walls are dry-lined. Horror stories such as those shown below are avoidable, and likely to lead to a failure and expensive remedial work!



Windows and doors must be a good fit, well sealed and properly glazed. Insulation must be continuous and complete around the entire building envelope, or thermal bridging is likely to occur.



In summary, Air Tightness Testing doesn't need to be a cause for concern for builders working to high quality standards with good materials. There are ample resources available to provide support at all stages of a build project. Certainly enough resources to ensure that the construction industry does its bit to assist the Government in meeting its Global Warming commitments in years to come.