

A change in the air

Nick Heaton, MD of EnviroVent discusses some of the pitfalls that last year's revisions to the Building Regulations have created for developers when it comes to ventilation, whilst offering practical solutions to potential problems.

The first building control legislation in England and Wales dates back to 1666 and the Great Fire of London where the rapid spread of fire through the city's closely built timber buildings destroyed 80% of the capital. The Government had to act to prevent similar tragedies from occurring, so in 1667 they introduced the London Building Act which provided surveyors with forcible regulations. Later acts of parliament expanded their scope to deal with sanitation and public health. In 1965, these local building by-laws were replaced by what we know today as the Building Regulations.



In October 2010, further revisions to the current Building Regulations brought about major changes to Part F (Means of Ventilation) in conjunction with Part L (Conservation of Fuel & Power). The revisions have resulted in significant steps towards ventilation becoming a 'controlled' service, focusing on energy efficiency and correct installation to ensure what is specified, is fitted correctly and works for the end user. Ventilation must now be installed by a competent person and signed off by Building Control; the days of bad practice surrounding MEV and MVHR Systems are coming to an end, good news for homeowners and a new challenge for developers who now find themselves with more red tape to contend with.

So why have the changes taken place?

In order to save energy and reduce carbon emissions new homes are now required to be built to increasing levels of air tightness, and as a direct result, the requirement for effective ventilation has increased. Adequate ventilation is no longer good enough. To reflect this one of the major changes has been to introduce two Air Permeabilities - one for a leaky house at $> 5 \text{ach @ } 50\text{Pa}$ and the other for an airtight property at $< 5 \text{ach @ } 50\text{Pa}$. With an array of products on the market, all designed to meet the criteria of the Building Regulations and the Code for Sustainable Homes, it can be a minefield deciding what to fit.

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In addition, to ensure that the theory works correctly in practice, one of the main influences responsible for the revisions surrounding the installation process was the 2007 BRE document, MEV & MVHR system monitoring for SAP Appendix Q.



This highlighted numerous cases where whole house ventilation systems had been installed so poorly that the air flow (already constrained by the use of flexi-ducting) was restricted so much that the air had to negotiate a 'spaghetti junction' of duct work in order to either extract or input any air into the property. Heat recovery units had been fitted in line with Code Level requirements;

however, because of the way in which they had been installed they were failing miserably to perform. The need to enforce good practice was therefore a key issue in moving forward to a controlled service.

The traditional approach: Background ventilators & intermittent extract fans

Trickle vents and extractor fans have been favored by house builders for years to ventilate a home. Due to the introduction of the new Air Permeability Designs the rates for background ventilation for an airtight property have increased. For example in a house with 4 bedrooms and a total of 9 windows, the background ventilation requirements could result in a requirement for 2 or 3 vents per window. However, in a smaller property with fewer windows this may be impossible to achieve. In addition to this, increased trickle vents are not ideal for developments where outside noise (such as a busy road or motorway) could be an issue. This may result in the adverse effect of the occupier closing the vents and before long the property could be suffering with condensation and mould problems.

A welcome alternative

One way to avoid problems with trickle vents and keep in line with Code Levels is to fit a BBA approved Positive Input Ventilation Unit (PIV). Normally situated in the loft space, PIV is a whole house ventilation system which works by delivering fresh, filtered air into a property at a continuous rate. One attractive benefit, especially in today's uncertain climate, is cost effectiveness. To install PIV the build costs are less than a third compared to other ventilation methods on the market, which amounts to significant savings for most budgets.

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It is quick and easy to install, without the requirement for core drilling, extensive ductwork or trickle vents. What's more, in domestic new build dwellings PIV can sometimes show better results in SAP than some MVHR systems.

Keep in control -Mechanical Extract Ventilation

MEV systems are now designed to meet a specific fan power of 0.7 W/l/s and must be supplied with either a manual or automatic control for boost settings. These must be sited in the areas of extraction i.e. bathroom, kitchen, en-suite or utility and not just located in a hallway or kitchen where access to operate the boost option may not be practical for the end user. Emphasis is now on the importance of ensuring that the end user correctly uses whatever ventilation system is installed. An easy solution to this is to install a system with wireless radio frequency switches or one with an intelligent humidity tracker.

In the last 5 years we have witnessed a great deal of research and development in the area of mechanical ventilation with heat recovery (MVHR). New and innovative products have appeared on the market, heat recovery has evolved from traditionally cumbersome devices into today's smaller and sophisticated designs. Energy efficient, heat recovery has become synonymous with the Code for Sustainable homes as an easy way for new build developers to attain favorable SAP ratings, whilst ensuring continuous Whole Home Ventilation in tighter properties.

Too hot to handle



Heat recovery systems with a summer by-pass as standard are worth investing in. A study conducted by Leeds Metropolitan University on the Stamford Brook development near Altrincham in Cheshire found the residents of two 3-storey test dwellings complained about excessive and uncomfortable internal summer temperatures. The problems of summer overheating could become a real issue as we are now building to a new level of air tightness in response to regulatory requirements. Traditionally summer –bypasses were separate from the main MVHR system; today these can be built integral to the unit and take up less space than their original

counterparts. If space is an issue, there are some good compact models on the market which are super energy efficient and well worth consideration, such as the EnviroVent energiVent® FLOW heat recovery unit, which won the domestic product of the year award at this year's H&V Awards.

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Future revisions will see further steps towards zero carbon homes with ventilation becoming a crucial building service.

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