

MVHR SYSTEMS IN HOMES – POST-INSTALLATION PERFORMANCE PERCEPTION AND REALITY

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Background

The last few years have seen a significant increase in the number of MVHR systems installed in new and existing homes with an estimated tens of thousands of systems having been installed in the last 12 months alone. The demand for such systems is likely to increase significantly over the next few years as a consequence of designers having to find cost effective ways of meeting more demanding carbon emission reduction targets. The next major milestone for the Building Industry to comply with is the recently published Approved Documents L1A and L1B which come into effect on 1st October 2010.

The increase in the number of systems being installed has, understandably, led to an increase in feedback from occupants and other interested parties on how MVHR systems perform in use and the maintenance regime required for such systems. This paper summarises the combined experiences of our members on how systems perform post-installation and compares the maintenance of such systems with conventional ventilation systems for consideration alongside other opinions on these matters.

The importance of correct design, installation and commissioning

The vast majority of post-installation feedback that our members experience from occupants living with MVHR systems is positive, with many commenting on how much they benefit from the system installed in their home. It is fair to say, however, that not all feedback is positive. Our members are aware of some installations where the feedback has been negative; however, when followed, up the negativity is almost always as a consequence of poor or incorrect design, installation or commissioning of systems. Often the MVHR unit itself is perceived to be at fault but this is rarely the case in reality.

The most common complaints are excessive noise levels which can be a consequence of an undersized MVHR unit, inadequately sized external air intake/extract terminals, high ductwork system resistance or inappropriate room air supply and extract valves/grilles or a combination of all four. Post-installation inspections often reveal external air intake and extract ducts from an MVHR unit connected to small roof tile vents without sufficient free area and creating excessive air resistance. Many an MVHR unit has “breathed a sigh of relief” (and a resulting drop in noise level) when disconnected from such vents. A properly sized MVHR unit with a suitably designed and installed system of ductwork using rigid ducting wherever possible and adequately sized air valves/grilles to minimise whistling seldom results in any disapproving comments being received from occupants.

Members have also experienced occasional adverse comments from occupants about the feeling of draughts directly under supply air valves/grilles. Eradicating completely the possibility of any occupant feeling a movement of air in the immediate vicinity of such valves/grilles is not possible, however, any complaints can be reduced to insignificant levels if appropriate valve/grilles are selected and positioned to minimise complaints.

Some members have experience of attending installations where, despite the properties having an MVHR system installed and providing the airflows in and out of each room as required by Approved

Document F, the homes still suffered from inadequate ventilation. This was found to be due to incorrect positioning of the supply and extract air valves/grilles in each room e.g. they had been located on the ceilings just inside the entrance to each room. This resulted in airflow from the dry to wet rooms through the hallway but with little circulation of air through some rooms. Positioning valves/grilles to allow adequate circulation of air will ensure adequate ventilation is achieved.

Incorrect balancing of systems can result in some rooms being over-ventilated and some under-ventilated. It can also lead to complaints of draughts and noise if too much air is supplied or extracted from a valve/grille. Proper balancing of airflows by a skilled commissioning operative using a suitable anemometer and hood helps prevent such problems.

There have also been some complaints about water leaking from MVHR units and air valves/grilles and collecting in ducts in lofts. These MVHR unit "leaks" can be due to the condensate drain attached to the MVHR unit not being properly installed or indeed installed at all. As for water coming through valves/grilles and collecting in ducts, this is almost always because insulated ductwork has not been used where it should have been during the installation of the system and condensation has occurred and built up.

At present, despite detailed information being available from numerous sources to those responsible for correct design, installation and commissioning of MVHR systems; it is often ignored or misunderstood by at least one party in the supply chain. There is also, unfortunately, little enforcement of good practice. Indeed with such a lack of "quality control" it is surprising that MVHR systems do not receive more "bad press" than the small amount that they do. The recently published "Domestic Ventilation Compliance Guide", to be introduced on 1st October 2010 will, in our members view, be a major catalyst in increasing the quality of MVHR systems which will result in greater energy savings, improved ventilation and increased occupant acceptability as it specifies exactly what needs to be done along with appropriate certification procedures to ensure it has been done.

The importance of providing correct information on the system to the occupants

Our members have experienced units having been switched off by the occupants. The main reasons for them doing so are due to their lack of understanding of how the system is supposed to work continuously, the benefits of it doing so and their perception that a system that consumes electricity continuously must be costing them a lot of money. This situation often coincides with occupants not having been left with appropriate user information and instructions.

When proper information and instructions are left with occupants and/or time is taken to explain the workings of the system with them, there is little chance of the system being switched off. The forthcoming revised Approved Documents F & L will ensure that more attention is paid than ever before to system installers having to provide sufficient user information. Our members are confident that this will ensure a greater proportion of occupants will allow the systems to perform to their potential.

Ongoing maintenance of MVHR systems – How do they compare to other systems?

MVHR systems are generally more extensive than other ventilation systems and incorporate more sophisticated technologies. This can create the perception that they somehow require a disproportionately high amount of ongoing maintenance. Again, the reality is somewhat different. The time spent properly servicing an MVHR system is comparable to properly servicing the ventilation components in a home ventilated by conventional extract fans or passive stack extract grilles and background ventilators (e.g. trickle vents in windows).

With the almost universal incorporation of no-maintenance fan motors, servicing of all three systems typically consists of no more than a clean of components and functional check approximately every 6 months, although the first clean following installation may be required sooner than this if the system has had to perform in a dusty environment following commissioning e.g. in an occupied house within a new housing estate with building ongoing. After a while, the filters in an MVHR system will require replacement, however, the cost of purchasing and fitting these is approximately the same as the cost of having dirty ones cleaned. A typical 3 bedroom house with an MVHR system may have one MVHR unit and 8 air valves/grilles to be cleaned and checked. The same house is likely to have 3 extract fans or passive stack extract grilles and around 10 background vents to be cleaned and checked. Many will say that extract fans or passive stack extract grilles do not always benefit from such planned maintenance. That may be so, but the fact remains that they should be maintained if they are to perform properly and safely and their maintenance regime and cost for the same is comparable to those required for an MVHR system.

Summary

The number of MVHR systems being installed has risen sharply in recent years and is forecasted to rise further in the coming few years. While MVHR systems have a very good track record of good performance and occupant satisfaction in the vast majority of home they are installed in, there are a small number of systems which have received negative feedback. When investigated these problems are almost always related to any one, or a combination of poor MVHR selection, design, installation, commissioning, occupant communication or ongoing maintenance.

Our members are confident that forthcoming new regulations and greater focus on the aforementioned issues regarding ventilation will increase the already relatively high levels of satisfaction experienced by the most important assessors of such systems, namely, the occupants.

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