WHITE PAPER



The importance of moisture management when improving the fuel efficiency of buildings

By The Property Care Association's General Manager, Stephen Hodgson

The <u>Green Deal</u> is fast approaching. Within the year hundreds, and then thousands, of property owners will be able to release funds to undertake insulation and fuel saving improvements, which will be paid back from projected savings in their gas and electricity bills.

With this in mind, the Property Care Association (PCA) is becoming increasingly concerned that some insulation treatments are being carried out by companies that are paying little, or no attention, to the wider implications or consequences of such treatments. This is particularly relevant in relation to ventilation, air movement and condensation.

Reducing draughts and increasing the thermal properties of walls, floors and ceilings is the key to reducing energy bills, but doing this will also often lead to an increase in the levels of airborne moisture in the living space.

When this is combined with the reductions in the rate of air exchange brought on by draught proofing and a possible reduction of the air temperature in spaces such as roof and floor voids, the risks of surface and interstitial condensation starts to rise.

Coupled with the possibility of less than perfect workmanship and incomplete programmes of insulation and the risk of condensation, mould growth and other problems associated with atmospheric moisture rise exponentially.

Condensation occurs when moisture laden air comes into contact with cold surfaces. Water is released when the relative humidity reaches 100% and the atmosphere becomes unable to hold all the water vapour held within it. This can occur on an external wall or window, or even a cold layer within the fabric of a property.

Kitchens and bathrooms are often the primary sources of atmospheric water. Moisture is released into the air through normal daily activities such as washing, cooking, drying laundry showering and bathing.

Temperatures that are comfortable for occupation coupled with high humidity generate an increase in atmospheric vapour pressure. This promotes the circulation of warm moist air around the property as the high pressure generated by warm moist activities naturally equalises with areas that are at lower pressure.



In this way, water vapour created in one area will quickly move around a building to be released as condensation in another, where it is left on any surface that is below the dew point. This can occur in unheated roof spaces, wall cavities or within vapour porous construction materials, as well as cold walls, floors and ceilings.

Not just unsightly and damaging in itself, condensation can result in the growth of mould, timber decay and damage to vulnerable elements of the structure.

Managing Condensation

There is no single magic remedy for eliminating condensation – a combination of actions usually achieves best results.

Improving air flow is important, but this should be in combination with a reduction in the production of water vapour.

Trickle vents in new windows help air flow, but positioning extractor fans close to the source of warm, damp air can substantially reduce the amount of water released into the air.

Insulation also needs to be considered. When fitted properly it will help stabilise the internal environment and allow higher temperatures that in turn can have a positive effect on the relative humidity. When insulating, any vapour control layers that are introduced must be fitted correctly. If vapour barriers are positioned on the colder side of insulation, there is a good chance that condensation will occur within the building fabric.

Ventilation and active atmospheric moisture management should be a primary concern. Forced and passive ventilation and the use of positive pressure ventilation systems should not be an afterthought.

The PCA Take on the Issue

At the PCA, we have seen a marked rise in the number of property professionals asking for advice on condensation issues.

With the cost of heating rising fast, fuel poverty is a reality for many, so the benefits of reduced fuel charges and a warmer home, funded by money available on long term interest free loans, are obvious.

However, the problems start when insulation is brought into the property without any consideration for the living condition of the occupants, the existing provision for air exchange and ventilation, the location of new or existing vapour control membranes, the presence of cold bridges and the implications of partial systems.



In most circumstances it seems that assessors who are drawing up the specifications for insulation work look carefully at the projected energy savings, the period of 'pay-back' and the feasibility of the installation. A great deal of emphasis is placed on the competence of the technicians doing the insulation work.

It has been our experience that specifications for insulation work are often formulaic. Inspections take little account of the prevailing condition of the building, the nuances of its design and construction, or the lifestyle of the occupants. This, coupled with a drive to deliver the lowest possible price for a 'package' of energy saving measures, can lead to problems further down the line which may be otherwise avoidable.

Improving the thermal properties of a building will not necessarily cause condensation problems; in fact in most circumstances insulation will help reduce problems. It is, however, of fundamental importance for the surveyor tasked with designing the insulation scheme to consider and understand the thermal dynamics of the building.

What is needed is an approach that looks further than simply bolting insulation to an existing structure. Assessors should be under a duty of care to the homeowner to deliver the expected energy savings whilst ensuring that the introduction of insulation will not lead to costly or damaging problems with dampness and condensation.

Drip-Feeding Information

The PCA offers training to help property professionals deal with the growing problem of condensation.

A series of one day workshops, entitled 'Condensation and Dampness in Buildings', are delivered by the Association, where delegates can gain an insight into the subject and learn practical assessment and control techniques.

The workshop is aimed at a wide range of professionals, including social housing and local authority property staff, as well as environmental health officers.

It is also aimed at surveyors, architects, estate agents, building inspectors and maintenance and remedial surveyors.

Click on the following link for further information on the Condensation course:

http://www.property-care.org/course-information/condensation-anddampness-in-buildings