

AN INTRODUCTION TO CONDENSATION

Condensation is a natural by-product of modern living. Its origins lie in the water vapour generated in human and animal respiration, in the drying of clothes and other laundry, in cooking, and as a product of combustion of gas cookers and portable gas heaters.

When standards of ventilation were poor, condensation often cured itself. Airbricks, chimneys and poorly fitting doors and windows provided sufficient ventilation to take the warmer air with the absorbed water vapour away. But, as standards of ventilation have improved, condensation has become a more serious problem. Increasing energy costs have forced the average householder to add double glazing, insulation and draught excluders to all but eliminate natural ventilation.

The warm air in the home absorbs the water vapour. Warm air rises, and where it comes in contact with any surface at a lower temperature, its ability to hold the water vapour is reduced. This excess water vapour condenses - to become condensation.

Everyone is familiar with condensation forming on windows. What is becoming more serious is that as more windows are being double glazed, condensation will still form but on surfaces which are immediately less obvious, but potentially far more serious. For example, on walls of bedrooms, and bathrooms and stairwells.

In the latter cases, the first signs of a problem are a steady deterioration in decoration. Wallpaper adhesives break down. Mould and fungus growths become evident, and finally the plaster itself breaks down as saturation increases.

When all these avenues have been exhausted by the householder, cavity wall insulation, increased standards of loft insulation, special water resistant paints, often with mould inhibitors - the condensation still persists. Its final resting place is often the floor where it will form under the carpets and underlay and rot them away from the underside.

Attempted Cures

In their lack of understanding of the true nature of condensation, many so-called 'cures' have been promoted. Early double-glazing promotions often mentioned its potential to 'cure' condensation. The same claims have been made by many other home improvement systems. For example, some exterior treatments claim to cure 'damp'. Where that damp originates outside the dwelling, as is occasionally the case, it does. But, in creating a moisture proof membrane outside, it can also prevent the fabric from inside to out. In fact it amplifies the condensation problem.

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There have also been many structural cures. These have involved lining the interior wall of the building with insulation board materials with vapour check barriers. In Local Authority operations, these have cost several thousands of pounds per dwelling. They still have not cured condensation. They have simply stopped it forming on the exterior walls of the house.

Why are Dehumidifiers different?

Dehumidifiers provide a different approach to the problem. If the potentially excess water vapour can be removed from the warm air before it is later cooled, then it cannot form as condensation. It does not simply heat the air, it actually removes the water vapour first. The principle is based on the simplest laws of Thermodynamics. It cools the air below its dew point. The water vapour condenses and the air is exhausted, now dryer and warmer. This principle is not new. On a larger scale, it has been used by the construction industry for the controlled drying out of new domestic and commercial buildings. It has been used by the Timber Trade to cure timber faster than was possible using more traditional, natural methods.

In reality, all that is new about Dehumidifiers is their general availability and more competitive prices made possible by larger scale distribution methods.

Summary

In essence, there are only two effective methods of curing condensation problems:

1. To heat and ventilate adequately
2. To dehumidify

At current energy price levels, it costs approximately three times more to cure the problem by use of method (1) than it does using method (2). Obviously as these energy prices increase, as indeed they will, the cost effectiveness of dehumidification will become even more startling.