Roof Ventilation – Misconceptions

Ventilation in buildings is required to prevent moisture vapour causing long term damage to the fabric of the building. How it is achieved is normally by complying with the Building regulations and the recommendations of BS 5250:2011+A1:2016 - Code of practice for control of condensation in buildings and BS 9250:2007 Code of practice for design of the airtightness of ceilings in pitched roofs. BS 5250 is currently undergoing a full review which should help to clarify the requirements needed in 2018.

It is generally accepted that there are three types of pitched roof construction

1) Cold roofs with insulation installed on horizontal ceilings
2) Warm roofs with insulation installed at rafters
3) Hybrid roofs a combination of both warm and cold roofs

Each of these constructions have different ventilation requirements dependent upon the roof pitch, the roofing material, roof type (mono, duo or lean-to) and the building size all of which need to be considered carefully at the design stage or when significant alterations are to be undertaken.

Another factor is where a "well sealed ceiling" or a vapour control layer (VCL) is installed then this need to be robust enough to last for the design life of the building.

With modern lifestyles creating more water vapour in warmer better insulated homes with less natural fortuitous ventilation and with changes to the British Standards, it is at times difficult to understand and interpret the ventilation requirements to ensure compliance especially when there is contradictory information being given by different manufacturers, installers, inspectors and testing bodies.

Given all this confusion in the industry there are some misconceptions that should be dispelled and the following are good examples:

> "*I don't need to have ventilation because I am using a breather felt*".
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> This is partly true but it requires strict adherence to the manufacturers installation instructions and this will normally require a well sealed ceiling and or a vapour control layer (VCL). This in turn also assumes that these will be maintained and not compromised over the life of the building.
> The NHBC has issued a guidance note that now requires all new properties with pitched cold roofs built under their schemes be ventilated to the outside, irrespective of any 3rd party testing certificates that may apply to the underlay.
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> "*I am converting an attic into a habitable room, without changing the roof covering and have been told this is acceptable by the contractor."*
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> The existing ventilation will not normally be sufficient to especially traditional low level, as this would have been installed to meet the requirements of a cold roof construction. If a LR membrane is present then installing a VCL may be sufficient to meet the requirements. It will also depend on the complexity of the roof with

Roof Tile Association
c/o British Ceramic Confederation, Federation House
Station Road, Stoke-on-Trent ST4 2SA
E info@rooftileassociation.co.uk W www.rooftileassociation.co.uk

regards to hips and valleys in particular. Introducing retrospective ventilation tiles or systems can be difficult and expensive to achieve the requirements.

"I have condensation in the loft is it harmful?"

Visible condensation forming on the underside of the underlay is not in its self an issue as it depends on when it was formed and for how long it is there for. Condensate run-off can be an issue for both impermeable (HR) and vapour permeable (LR) underlays. Underlays that can absorb or hold moisture are seen as preferable as at certain times of year as at times more vapour is generated than can be dealt with immediately and once more favourable conditions return it will allow it to re-evaporate. If there is persistent condensation that the ventilation cannot cope with though under the right conditions then there is likely to be mould growth, staining and even rot.

"I have been advised to open the loft hatch to get rid of my condensation."

This is not recommended as all of the heat in the house will now rise through the opening and any vapour present will probably make matters worse. When the conditions return back to normal the condensation will be dispersed again. However If there is persistent condensation that the ventilation system cannot cope with then there is likely to be mould growth, staining and even rot.

"Can I have too much ventilation?"

Excessive ventilation too can be just as much of an issue as having insufficient or none at all. Ventilation requires a chimney effect to be effective so having too much in the wrong location can prevent this from happening.

"I have increased the depth of insulation in my loft and now have a condensation issue."

Increasing loft insulation can produce a condensation problem due to the roof void becoming much colder and any vapour passing through will be attracted to the now

potentially colder underlay and form condensate. If there is eaves ventilation then it is important that the effective air path is not blocked or compromised as this will substantially reduce the effectiveness of the roof ventilation.

"I have a 'well sealed ceiling' and I am installing new lights and extract ventilation pipes, are there any issues?"

Any new cable or pipes that pass through the ceiling must be sealed which for light fitting mean being IP60 or IP65 rated or better, otherwise any vapour will have a passageway into the roof voids which the installed ventilation system then may not be able to cope as required.

"My contractor is going to vent an extractor fan into the loft space?"

An extractor fan pipe can pass through the roof void but should not discharge into it. A suitable terminal should be used in either the roof or a wall to connect the pipe to. As the pipe will be carrying warm moisture laden air the pipe must me insulated to ensure that the air is not allowed to condensate either on or in the pipe and then flow back into the building. In some situations a condensation trap should be installed to prevent water dripping back into the building. The pipe run needs to be as short as possible and planned carefully with smooth pipes being used with as few bend as necessary and any flexible connectors
also kept as short as otherwise the fan may not be up to the task. Where a tile vent is to be installed the opening should be made weathertight and sealed if required to maintain the integrity of the roof.

"I have been told to install air bricks at each gable end of the loft space, is it enough?"

It is unlikely to achieve the necessary ventilation flow through the roof void without the addition of low level ventilation as well. This will depend on the size of the building and the location and capacity of the air bricks. A survey by a qualified surveyor should be carried out.

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“ I have a warm roof with full fill insulation do I need a counterbatten ?”

For this situation a counterbatten is required. It will allow the air to circulate correctly and in addition should any water penetrate the tiling in extreme conditions then it provides an unrestricted pathway for it to reach the eave.

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