Ventilation compliance when installing insulation under the Green Homes Grant scheme

This guide sets out an easy path for installers to comply with the legal requirement that the indoor air quality of a home must not be made worse by adding insulation, double glazing or draught-proofing measures under the Green Homes Grant scheme.

The requirements

Installers working under the scheme must be Trustmark registered and meet Publicly Available Specification Standards (PAS 2030) to install energy efficiency measures. PAS 2030 states that the following is required:

> "*Provision of deliberate ventilation sufficient to ensure adequate internal air quality and minimise internal surface condensation risk, especially where the air-tightness of the building envelope will be improved by the installation of insulation, draught stripping, new windows or any other measure*"

This is consistent with the Building Regulations which require that, where building work is carried out on an existing building, "the rest of the building should not be made less satisfactory in relation to the requirements than before the work was carried out." As the above measures all increase airtightness, they can negatively affect the ventilation of the building, and this must be addressed.

Meeting the cost of ventilation work

Government guidance on the scheme makes it clear that subsidy received by consumers in the form of the Green Homes Grant voucher can be used to cover "reasonable enabling work to support the retrofit." A specific item listed in this guidance is repairing and improving controlled ventilation. This means that the provision of ventilation alongside insulation can form part of the grant.

The principles of compliance

Compliance will be ensured by following the requirements laid out in Approved Document F, Means of Ventilation, and the Domestic Ventilation Compliance Guide. The principal aims for ventilation are to:

- Extract water vapour from 'wet' rooms (e.g. kitchens, utility rooms and bathrooms)
- Provide a minimum supply of outdoor air for occupants to disperse indoor air pollutants.

A cost-effective route to compliance within the Green Homes Grant scheme is to install intermittent extract fans of the right capacity in 'wet' rooms and to ensure that fresh air enters the building through background ventilators without causing drafts or discomfort.

Compliance without the headaches

Ventilation manufacturers have created the Green Home Compliance Scheme to help installers identify products that will meet the Building Regulations requirements and deliver effective ventilation.

It is important that an extract fan needs to remove air at a defined rate when installed – overcoming any resistance to air-flow from ducts or grilles etc.

A list of compliant products can be found on the BEAMA Ventilation website.

Selecting and installing products listed here will ensure you overcome any potential problems that could occur as a result of increasing the airtightness of the dwelling.

Compliance in detail

This document focusses on Building Regulations compliance using a 'system 1' approach[1] with intermittent extract fans in wet rooms plus background ventilation. The specification covered by the Green Home Compliance Scheme is as below:

Extract Fans

Required performance once installed:

- Toilet Fans will extract a minimum of 6 litres per second.
- Bathroom/Ensuite Fans will extract a minimum of 15 litres per second.
- Utility room Fans will extract a minimum of 30 litres per second.
- Kitchen Fans will extract a minimum of 60 litres per second.

The minimum performance of the fans should have been tested in accordance with Green Homes Compliance Scheme Test Protocol to ensure they deliver this performance when installed.

Background ventilation

With improvements to airtightness, it is important to ensure that there is sufficient fresh air entering the building to replace the stale air extracted. This is achieved by following one of the provisions described below:

MINIMUM provision:

- If there are already trickle ventilators on the windows these should be checked to ensure they are working and open (replacing broken ventilators if necessary).
- If double glazing is installed these should be fitted with trickle ventilators, sized as below:

[1] There are a number of ways to comply and full details can be found in the BEAMA document 'Protecting Indoor Air Quality when Insulating the Home.'

- If the previous windows had trickle ventilators the new ventilators should be at least the same size, and controllable.
- In other cases, the minimum sizes should be:
  - Habitable Room (Living room, Dining room, Bedroom, Study) – 5000mm² equivalent area
  - Wet Room (Ensuite, Bathroom, Utility room, kitchen, WC) – 2500mm² equivalent area

BEST PRACTICE background ventilation rate for whole dwelling:

If background ventilation is supplied via the trickle vents in the windows, they should have the Equivalent Area (EA) marked on them in mm², if they meet the current standard. These Equivalent Area totalled up give you the total background ventilation for the dwelling. You can use the table below to see if best practice is achieved.

If the background total dwelling ventilation rate cannot be achieved via the total of the Equivalent Area of the trickle window vents then additional through the wall vents may need to be installed.

Total equivalent ventilator area[a] (mm²) for a dwelling with any design air permeability					
Total floor area (m²)	NUMBER OF BEDROOMS[b]				
	1	2	3	4	5
≤50	25000	35000	45000	45000	55000
51-60	25000	30000	40000	45000	55000
61-70	30000	30000	30000	45000	55000
71-80	35000	35000	35000	45000	55000
81-90	40000	40000	40000	45000	55000
91-100	45000	45000	45000	45000	55000
>100	Add 5000mm² for every additional 10m² floor area				

a. The ***equivalent area*** of a ***background ventilator*** should be determined at 1 Pa pressure difference, using the appropriate test method given in Table 5.3.
b. This is based on two occupants in the main bedroom and a single occupant in all other bedrooms. For a greater level of occupancy, assume a greater number of bedrooms (i.e. assume an extra bedroom per additional person). For more than five bedrooms, add an additional 10000 mm2 per bedroom.

If there are no trickle ventilators in the current windows and windows are not being replaced in the dwelling as part of the energy efficient measures, then a provision for other background infiltration needs to be provided to meet the minimum ventilation rates, e.g. through the wall draught reducing vents.