

Use of the BRE Excess Cold Calculator - Case Examples

Choice of remedial work

Background

A complaint was received from a private tenant advising that his heating was insufficient to heat one bedroom in his flat and that he was suffering from significant condensation mould in the same room.

The flat is on the first floor of an original end-terrace inter-war local authority house that was extended at the rear over two stories during the early 1980s. This extension appeared to be of un-insulated cavity wall insulation under a flat roof. The original house wall construction would be un-insulated cavity walling. The property has since been converted into a ground and first floor flat. It does not appear that cavity wall insulation was provided and neither is there any evidence that additional insulation was provided to the flat roof. It is considered that any insulation originally provided will be fairly minimal. The roof space under the pitched roof was found to have a glass-fibre quilt of around 150mm depth. The first floor flat comprises of a lounge/kitchen, bathroom and two bedrooms. The bedroom of concern is located at the rear in the part of the construction under the flat roof. It has three external, heat-loss walls but has been provided with a post-2002 double-glazed window of pvc-u construction. The room has a small central heating radiator as part of the heating distribution system serving the flat. The boiler is a relatively modern non-condensing combination boiler and is in good condition.

Initial Impressions

Upon first inspection there was some concern about the ability of the heating provided to adequately heat the bedroom of concern, particularly taking into account the un-typical number of heat loss surfaces overall and the thermal resistance of the flat roof given the small radiator output size.

The XCC was used to assess the design heat losses and confirmed that, for the bedroom in question, it would not be possible to achieve a healthy internal room temperature over the winter months. Several options for remedial action were then considered.

Discussions were had with the property owner whose preference was to improve the heating. The initial preference of the local authority was to improve the thermal resistance of the bedroom walls and roof construction by fixing thermal board to the internal wall and ceiling surfaces of the bedroom.

The XCC was used to model the changes that would occur using various scenarios including:

- 1) A change of radiator to improve the size of the heat output with no changes made to the structure.
- 2) Fixing thermal board to the internal surfaces of all walls and ceilings with no changes made to the heating radiator.
- 3) A combination of a larger radiator and fixing thermal board to the ceiling in the bedroom.

Outcomes

Use of the XCC was able to demonstrate that the owner's proposal of changing the existing radiator to a larger one would result in enough of a temperature increase in the bedroom over the winter months to achieve a healthy temperature despite the deficiencies in the structural thermal resistance.

Without using the XCC it is likely that enforcement action under the Housing Act 2004 would have been taken to require the application of thermal board to the walls and ceiling of the bedroom. This would have been a more expensive option for the owner and should there have been an appeal it is likely that the requirements of the action would have been varied.

As the authority were able to accept the owner's proposals, more open negotiations were possible to seek work to reduce the thermal conductivity of the structure and some improvement of the flat roof construction was achieved on a voluntary basis.



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