



Sharing what we know...

Sheet 2: External Wall Insulation

Almost one-third of all UK houses have solid walls and we'll be living in these homes for decades to come. If we don't improve these houses it will be difficult to meet our current heating needs using only renewable energy. It's therefore vital that we have effective internal and external wall insulation techniques.

Most houses built in the UK from the Victorian era up to about 1920 will have solid brick walls. You can identify these types of walls by the pattern of bricks. Some of the bricks will be laid sideways in order to bond a double-brick wall.

External wall insulation is a good option for improving these homes because it's less disruptive and doesn't reduce room sizes. Houses with cavity walls may also need this approach if a cavity fill is unsuitable, or for a high-level retrofit.

This approach should keep the whole building warm and dry – protecting your home for years to come. Adding external wall insulation leaves walls on the warm side of the insulation, where they act as thermal mass. This means the solid walls will help to retain heat in winter and to keep your home cool in summer. External cladding is also ideal if your house is part of a row or block, making a shared retrofit possible.

Mix and Match

For some houses you'll find a combination of external and internal wall insulation is either necessary or practical. You may have to use internal insulation on the front to maintain the façade and therefore satisfy planning restrictions. However, the house could still have external insulation across all other walls.

Another example is if a pathway or driveway between two houses is narrow, not leaving enough width for external cladding. In this case, a section would need internal insulation. See our advice sheet on internal insulation for more on how to get the details right.

Finding skilled installers will be important, as precise work is key for a successful insulation job. They must deal properly with all the external pipes and other gubbins so they don't leave uninsulated thermal bridges.

Walking our Talk...

Eco-retrofit

South Downs Eco Lodge



Choosing the materials and technique

Conventional insulation panels are slabs of mineral wool or plastic foam. Low-impact alternatives made from natural fibres have lower pollution and energy use in manufacture. These natural materials should also be easier to recycle or dispose of at the end of their useful life. They also tend to promote breathability, which is often vital for older homes.

Natural insulation materials for external insulation include rigid wood fibre boards. A common option is to fix these rigid insulation panels to the walls with screw fittings, and render to finish. Solutions are available as a package including screw & plug fixings, mesh, membrane, layers of render, and so on. These work with a particular insulation material to ensure a robust finish – so you don't get cracks and damp ingress.

Another option is to put up a timber framework and fill it with a fluffy type of natural insulation fibre. The framework should be designed to minimise thermal bridging. You can achieve this by using timber I-beams or Larsen trusses for the uprights.

To hold the insulation within the framework and to allow it to breathe, you'll need a suitable board or membrane for a vapour control layer (VCL). To prevent internal condensation, leave an air gap between this VCL and the external cladding. Protect these ventilation gaps by including mesh at the top and bottom. For the final finish you could have timber weatherboarding, hung tiles, or rendered board.

Up to the roof

An important factor in the overall cost of external insulation is the width of your eaves. You could have the insulation just fitted underneath if there's already a reasonable overhang. If there's not, you should really get the roof extended to cover the top of the cladding. If you don't ensure adequate protection for the top of the insulation, rainwater can get behind it and cause horrible damp problems.

Work to extend the roof could be planned alongside the installation of solar panels in order to share scaffolding costs. In some houses, this roofing work could allow for the addition of high levels of insulation in the roof slope.

If altering the roof is really not possible, installers may use a plastic channel to cap and protect the top edge of the insulating cladding. They'll then seal the cap to the wall with silicon mastic to try and prevent water ingress. This approach needs to be done very well to ensure a good finish. A more reliable waterproof finish is possible by cutting into the wall to add flashing out over the insulation.

Windows and doors

The detailing where external insulation meets windows and doors should be simpler than with internal insulation. This is because windows are usually towards the outer edge of the wall. Overlapping the insulation with the window frame will mean you don't leave a thin uninsulated section around the frame. If there's no overlap, the meeting point could be a thermal bridge – leaving a path for heat to escape.

Rigid board external insulation should make it easier to do the detailing up to windows. With a good-quality window, the frame itself should have a decent insulation value. Check with the installers to see how the detailing at windows and doors will be carried out. Make sure that the approach being taken will avoid thermal bridges.