

Introduction

Older homes with solid walls can be problematic to keep warm. However, while they are not as easy to insulate as modern homes there are still improvements that can be made to optimise the energy efficiency of a property. This fact sheet introduces some of the options.

How do you know if your home has solid walls?

If your house was built before 1930 it is likely to have solid walls. Have a look at the diagram below. Which pattern matches the bricks on the outside of your house?



If you have cavity walls it is recommended that you consider cavity wall insulation. For more information, contact the Kent Energy Centre on 0800 358 6669. Please note that some walls may have the appearance of being solid but are in fact a cavity wall. This is true for more modern buildings that may utilize traditional looking building techniques (e.g. in conservation areas). If you are in any doubt please consult an expert.

What can be done?

As insulating solid walls can be expensive it is important to ensure that you already have the more cost effective energy saving measures installed. These include:

- Loft insulation.
- Draught proofing.
- High efficiency condensing gas or oil boiler with heating controls (main thermostat, thermostatic radiator valves, heating timer/programmer and hot water tank thermostat)
- Hot water tank jacket.

Reducing heat loss through solid walls

If you have a solid wall (or indeed a cavity wall that cannot be filled for whatever reason), then you might consider internal or external wall insulation. As much as 45% of the heat loss in a building is through solid walls and the heat lost through an uninsulated solid wall is typically more than double that of an uninsulated cavity wall.

Insulation of solid walls can therefore dramatically reduce heat loss and improve the energy performance of a building. This, preferably in combination with other energy saving methods, can have a number of benefits:

- Increased warmth and comfort.
- Reduced fuel bills.
- Reduction of problems associated with condensation, damp and related mould growth.
- Reduced management and maintenance costs.

How do I insulate my solid walls?

Both internal and external wall insulation can be provided in a number of ways with regard to materials and application systems. In both cases, there is a considerable amount of associated building work and such insulation upgrades are best considered as part of a bigger refurbishment works. The technical solutions are well proven but attention to detail for each is important to achieve effective insulation.

1. Internal wall insulation

The different types of internal wall insulation include: a directly applied internal insulation board; an internal studwork structure with insulation set between the studs; and plasterboard or flexible insulation linings.

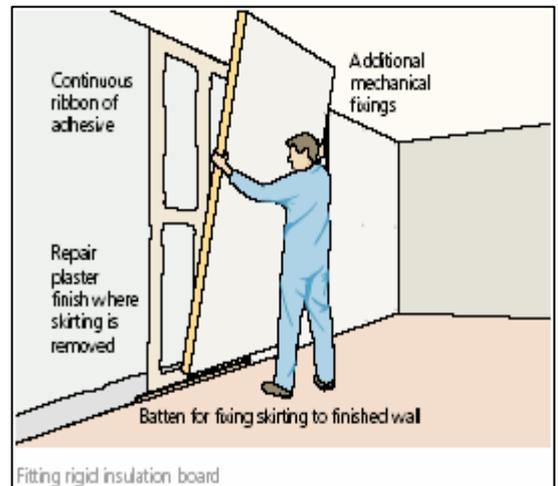
Costs	Installed costs start from around £42 per m ² (around £35 per m ² for flexible insulation lining).
Savings	<ul style="list-style-type: none">• Approximate annual energy bill savings of £270-£300 per property (£90-£100 for flexible insulation lining).• Nearly 2.4 tonnes of carbon dioxide a year.
Grants	Grants may be available in certain Local Authority areas. Call us on 0800 358 6669 to find out more.

Note: All costs and savings stated are approximate only as at April 2007. Costs are based on an average 3 bed semi-detached house.

Techniques

a) Directly applied internal insulation board

- This can be in the form of a plasterboard sheet laminated to an insulation board, or the insulation board may be separate.
- Rigid insulation boarding is a composite board made of plasterboard with a backing of insulation.
- The insulation backing comes can be specified in a variety of thicknesses.
- Insulation in excess of 60mm will typically be required to achieve best practice levels of performance.
- Up to 100mm of insulation can be included.
- Rigid insulation boards are usually fixed to the wall surface using continuous ribbons of plaster or adhesive, plus additional mechanical fixings.
- The joints between boards should be lapped and sealed to help prevent air leakage.
- The insulation is fitted to all outside interior walls of the property.
- Electrical components (e.g. sockets, switches) need to be extended through the insulation.
- Window reveals need to be insulated. This can reduce the 'open' area for daylight.
- Before installation the surface of the wall must be carefully prepared.
- Where existing plaster is removed and the brick is uneven, the wall must be levelled using render to provide an even surface for fixing.



b) Insulated studwork



- The insulation is held between a metal or timber framed system and finished with a vapour control layer and plasterboard.
- This approach allows a variety of insulation thicknesses to be installed.
- Internal studwork should be used where internal insulation has been specified for a wall that has previously suffered from damp.
- This allows the creation of a cavity between the internal wall surface and the insulation.
- Studwork is also an effective solution where the wall is bowed or uneven and space is not at a premium.

c) Flexible Insulation Lining

- Flexible thermal linings are insulation on a roll specifically for use in solid wall homes, mansard roofs and dormer ceilings.
- The lining is 10mm thick and supplied in rolls one metre wide, 12.5 metres long.
- The material is made from a natural product (latex) in an open and closed cellular construction and has a durable fibreglass face that can be decorated with emulsion, wallpaper or tiles.
- Flexible insulating linings are cheaper and less disruptive to install, though savings on your energy bill are lower.

Technique	Advantages	Disadvantages
Directly Applied Internal Insulation	<ul style="list-style-type: none"> • Can be applied to part of the dwelling. • Annual savings higher than flexible dry lining. • Cheaper than external wall insulation. 	<ul style="list-style-type: none"> • Services need to be refitted and skirting replaced. • May be less robust than solid. • Loss of floor area and room size. • Requires displacement while work is carried out. • Possible problems due to interstitial condensation if placed on a heavy masonry wall (additional measures may be required).
Insulation Stud Work	<ul style="list-style-type: none"> • Good where wall is bowed or uneven. • Should be used where surface has previously suffered damp. • Can be applied to part of the dwelling. • Annual savings higher than flexible dry lining. • Cheaper than external wall insulation. 	<ul style="list-style-type: none"> • Services need to be refitted and skirting replaced. • May be less robust than solid. • Loss of floor area and room size. • Requires displacement while work is carried out. • Possible problems due to interstitial condensation if placed on a heavy masonry wall (additional measures may be required).
Flexible Insulation Lining	<ul style="list-style-type: none"> • Can be applied to part of the dwelling. • Cheaper than other types of internal wall insulation. • Can be applied DIY. 	<ul style="list-style-type: none"> • Lower annual savings than other types of internal wall insulations.

2. EXTERNAL WALL INSULATION

External insulation systems are made up of an insulation layer fixed to the existing wall (using a combination of mechanical fixings and adhesive, depending on the insulation material used) and a protective render or cladding finish. Planning permission may be required in some cases as the insulation may radically change the property appearance. In all cases the work should be carried out by a specialist and competent installer.

Costs	Installed costs start from around £1,900
Savings	<ul style="list-style-type: none"> • £290 -£300 a year on your energy bills. • Nearly 2.5 tonnes of carbon dioxide a year.
Grants	Grants may be available in certain local authority areas. Call us on 0800 358 6669 to find out more.

Note: All costs and savings stated are approximate only as at April 2007. Costs are based on an average 3 bed semi-detached house.

Techniques

a) Wet-render systems

- Most external renders consist of either thick sand/cement render applied over a wire mesh, or a thinner, lighter polymer cement render applied over a 'GRP skim'.
- A 'pebbledash' render should need less maintenance than a painted render finish.



Wet render finish

b) Dry-cladding

- Many owners find dry-cladding to be more aesthetically pleasing because of the different cladding materials that can be used, including timber panels, stone or clay tiles, brick slip or aluminium panels.
- The drawback of dry-cladding systems is that they can be relatively expensive compared to wet render systems.



Brick slip cladding

Technique	Advantages	Disadvantages
Wet Render	<ul style="list-style-type: none"> • Cheaper than dry cladding option. • Can improve rain screen protection and appearance. • Does not require displacement while work is carried out. • Cost effective energy efficiency measure if carried out alongside remedial work to wall. 	<ul style="list-style-type: none"> • Aesthetic may not match original and there may be increased fragility to exterior skin. • May need planning permission. • Needs specialist installer. • More expensive than internal insulation, similar savings. • May have to alter/change soffits and fascias and provide alternative roof ventilation.
Dry Cladding	<ul style="list-style-type: none"> • Can improve rain screen protection and appearance. • Does not require displacement while work is carried out. • Cost effective energy efficiency measure if carried out alongside remedial work to wall 	<ul style="list-style-type: none"> • Aesthetic may not match original and there may be increased fragility to exterior skin. • May need planning permission. • Needs specialist installer. • More expensive than internal insulation, similar savings. • May have to alter/change soffits and fascias and provide alternative roof ventilation.

What do I do next?

Contact the Kent Energy Centre on 0800 358 6669 for free and impartial advice and up to date information on costs and grants.

Other sources of information

Alternatively you can find out more information on solid wall insulation from:

Organisation	Telephone Number	Web address
National Insulation Association	01525 383 313	www.nationalinsulationassociation.org.uk/
Insulated Render & Cladding Association	01428 654 011	www.inca-ltd.org.uk/
External Wall Insulation Association	01428 654 011	http://dubois.vital.co.uk/database/ceed/draught.html

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