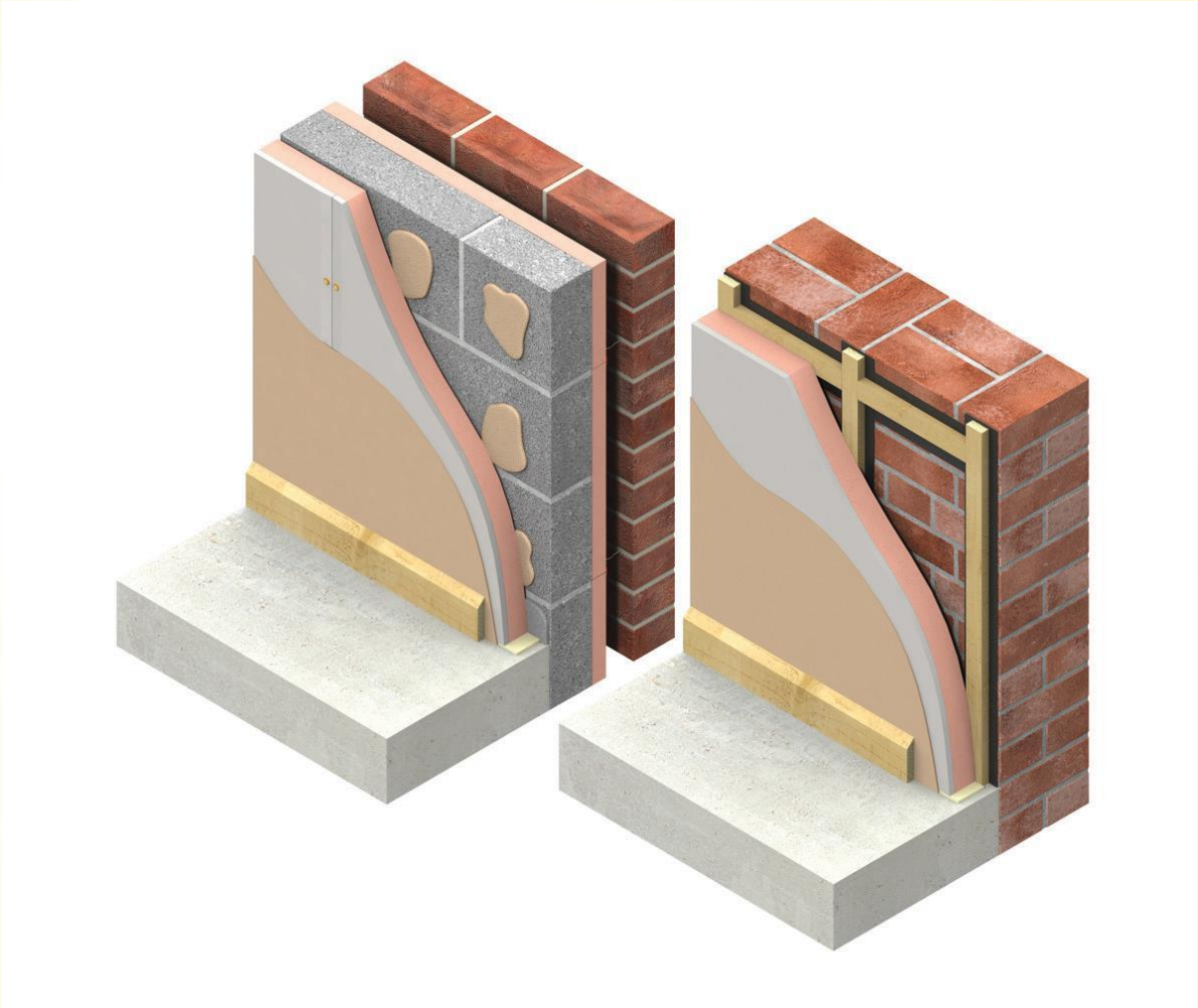
The Ezy Fit K Insulated Dry Lining System Design Guide & Install Manual



Ezy Fit, Commer House, Tadcaster, LS24 9JF

Why Insulate a solid wall?

Did you know that up to 45% of the heat lost within the home could be lost directly through the walls?

The majority of losses are through solid walls rather than walls built with cavities in. Most homes today are built with a cavity wall with insulation between both wall faces however in older properties insulation was not a consideration as the properties were being built.

A home with no or poor wall insulation could save many hundreds of pounds per year off their energy bills with a few simple steps and a basic insulation system. Not only that but the comfort factor of a home would increase massively once a home is correctly insulated.

Correctly insulating a solid wall home can directly lead to

- ✓ Savings from annual energy bills
- ✓ Reduction in exposure to damp
- ✓ Assistance with various health benefits associated with a damp or cold draughty home.
- ✓ Increase in comfort levels
- ✓ Extended life of heating appliances, as they don't have to work as hard with a well-insulated home

Internal Wall Insulation

The K System is an internal wall insulation system, this design guide will focus on the K insulated dry lining system.

Internal Wall Insulation is a method of insulating the outer wall of the property from inside of the property. With this method a home will lose between 20mm – 100mm of an external facing room but gain hundreds of pounds per year in savings made on energy as well as warmth and comfort beyond that previously experienced in an un-insulated home. The Home occupier also receives neatly plastered walls that are ready to be painted as well as a warmer home.

How it works

The insulation is placed against the inside of the outer wall, this means that fixtures such as radiators, if fixed to the outer wall will require removing and reinstating once work is completed, these are tasks that are standard practice with an Installer of Internal Wall Insulation.

With the internal wall insulation system, planning permission is rarely required (please check for listed or protected buildings) and likewise work can be completed all year round as all the required work is carried out on the inside of the house.

Internal Wall Insulation is often favoured when seeking a lower cost alternative to external wall insulation, sometimes the cost barrier associated with installing insulation on a solid wall property can be the difference between an insulated and an uninsulated home.

Some of the advantages of using an internal wall insulation are:

- The outer appearance of the home is not impacted, thus protecting the look and feel of a property.
- The inner walls of a property receive a makeover with freshly installed plasterboard walls that are ready to decorate
- No scaffolding is required to apply internal wall insulation.
- Internal wall insulation can be installed all year round, unlike external wall insulation.
- It can be installed on a room-by-room basis, so you do not need to “decant” the entire house while work is being carried out.
- It is usually Cheaper to install than external wall insulation.
- It is usually faster to install than external wall insulation.

It is also worth noting that in some instances a mix of both internal and external wall insulation can be used on a property. This is called a “Hybrid” solution.

As with the installation of any internal wall systems, Ezy Fit would always recommend that an interstitial damp and condensation report is carried out, prior to install, to confirm the suitability of the property for the systems being considered.

The Ezy Fit K Insulated Dry Lining System

The Ezy Fit K Dry Insulated Dry Lining System comprises of Kooltherm rigid phenolic board faced on one side with a perforated foil and on the other with an unperforated foil which is bonded to the plasterboard. The system is for use as an insulating dry lining to masonry (solid and cavity) walls and the underside of timber or steel rafters in pitched roofs, in existing and new dwellings and buildings of similar occupancy.

Table 1 Nominal characteristics

Characteristic (unit)	Value
Length (mm)	2400
Width (mm)	1200
Insulation thickness (mm)	25 to 80
Thickness of plasterboard (mm)	12.5
Weight of plasterboard (kg)	24
Edge profile	Tapered

Table 2 Example U[1] values for walls and sloping sides of the pitched roofs

Board thickness (mm)	Phenolic foam thickness (mm)	U value for lining to walls ($W \cdot m^{-2} \cdot K^{-1}$)		U value for lining[2][3] to pitched roofs ($W \cdot m^{-2} \cdot K^{-1}$)
		Adhesively fixed[4] (dots and dabs)	Mechanically fixed[5]	
32.5	20	0.53	0.56	0.75
42.5	30	0.41	0.46	0.61
52.5	40	0.33	0.39	0.51
62.5	50	0.28	0.34	0.44
72.5	60	0.24	0.30	0.38
82.5	70	0.22	0.27	0.34
92.5	80	0.19	0.24	0.30

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General Design Considerations

The Ezy Fit K Dry Insulated Dry Lining System is installed using various adhesives and/or can be mechanically fixed, either directly onto the wall or onto the timber battens or metal furring (see the Installation part of this design guide). The system is for use as adding insulation to masonry (solid and cavity) walls and the underside of timber or steel rafters in pitched roofs, in existing and new dwellings and buildings of similar occupancy and in non-load bearing partitions.

The foil bonded to the plasterboard provides the integral vapour check for the system, it is recommended that services which penetrate the dry lining, e.g. light switches, and power outlets, are kept to a minimum to limit damage to vapour checks.

Masonry Walls:

The system may be installed on masonry construction including clay and calcium silicate bricks, concrete blocks, and natural and reconstituted stone blocks. Since adding insulation on the inside of a property is not intended to resist rain penetration, walls that are to be insulated must already be rain resistant from the outside of a property and show no signs of water ingress. If present, mould, or fungal growth should be treated prior to the application of the system.

With an internal wall insulation system that forms a void of 25 mm or more services can be incorporated behind the internal wall insulation, making the chasing of the wall unnecessary. Where the services have a greater depth than the void, the wall should be chased rather than the insulation. Suitable isolation methods, such as a conduit or capping, must be used to ensure cables do not come into contact with the insulation

The installation of an internal wall insulating system requires careful detailing around doors and windows to achieve a satisfactory surface for finishing. In addition, every attempt should be made to minimise the risk of thermal bridging at reveals and where heavy separating walls are attached to the external wall. New work must be designed to accommodate the thickness of the insulation system, particularly at reveals, heads, and sills and in relation to ceiling height. Where the dimensions of fixtures are critical (e.g. bathrooms), these should be checked before installation.

Pitched Roofs:

Pitched roofs should be designed and constructed in accordance with BS 5534 : 2003 (see sections 16.6 to 16.10) and incorporate normal precautions against moisture ingress.

In tiled or slated pitched roofs designed and constructed as above, the system is suitable for use beneath the rafters in conjunction with a BBA-approved breathable membrane and, when necessary, a VCL.

Always Avoid possible Damp before fitting and ventilate correctly.

When you “wrap” a building you can accidently trap an issue that has gone un-noticed for years. The importance of a good survey and correct ventilation. We recommend a PAS (Publicly Available Specification) Assessor and Co-ordinator be used as they are trained in ensuring all properties are correctly ventilated when additional insulation is added to a property. We would always recommend having a professional damp report carried out if in any doubt.

Any damp present should be eradicated with the assurance that it will not return once insulation is added. This needs to be carried out prior to insulation being added to a property, this action plus the inclusion of correct ventilation being added to a property will ensure the comfort level is enhanced within the building whilst maintaining building maintenance. We always recommend using a fungicidal wash on the wall prior to installing any internal wall insulation system.

Blocked gutters, rotten or poorly fitted windows can create these damp issues. Likewise, if you are in a building with poorly maintained render on the outer wall of the building, we always recommend making sure all surfaces are sounds. You do not need to hack any plaster off or re-render walls, but sound render is key to a dry wall. If you live in one of the high exposure zones within the West of the UK then we also recommend checking that your render is sound and if you have no render on the outer surface of your external walls, we recommend ensuring that all walls are not porous and where needed an interstitial condensation report is carried out to ensure internal wall insulation is suitable for your property.

Thermal bridging occurs when the continuity of the insulation is broken, causing the inner surface of the wall at that point to become much cooler than the surface where the wall is insulated. This can often occur at the junction of a wall and separating floor. Thermal bridging can cause an increase in heat loss, surface condensation and mould growth and can often be a problem in terraced houses.

Surface condensation – Occurs when water vapour in the air cools and condenses (reverts to liquid form) as it comes into contact with colder surfaces. Reducing the amount of water vapour in the air by extracting moist air from kitchens and bathrooms and increasing the surface temperature will prevent condensation forming on the internal surface of solid external walls. The installation of the Ezy Fit K Insulated system will raise the surface temperature of the walls to a level whereby condensation will not form under usual maximum humidity conditions experienced in dwellings.

Combustion appliances – It is imperative that ventilation requirements of gas, oil or coal fired combustion appliances are not compromised by the installation of Ezy Fit K Insulated system and that the system does not interfere with the supply of fresh air to the appliance. Recommendations, guidance, and compliance to building regulations for the ventilation of combustion appliances can be found in building regulations and must be adhered to.

If in doubt always utilise the services of a gas safe engineer.

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Damp Proof Couse (DPC) – The Ezy Fit K Insulated System should always be installed above a working damp proof course. In no way should the system compromise or bridge a DPC as this will lead to greater problems at a later date. We always recommend an injection DPC if no DPC is in place or if the DPC is compromised and cannot be rectified with standard building methods

Party Walls – Thermal Junctions can occur when insulation is not continuous. A party or adjoining wall is an area that can create a thermal junction. Whilst returning the insulation on a party wall can mitigate the thermal bridging, care must be taken if insulating along a cold party wall which could in theory make the wall colder and increase the risk of cold or damp that is already there if the neighbour's property is not heated or correctly ventilated.

Always speak to your Retrofit designer for advice on thermal bridging that is unique to the property being insulated. Whilst Ezy-Fit can advise on generic information each building needs to be separately assessed and evaluated for best possible solutions.

Before installing the Ezy Fit K System, always ensure that a comprehensive survey has taken place which also evaluates the outer surface of the external wall as well as the soundness of the structure, efficiency of guttering and avoidance of application to damp or poorly ventilated properties.

Ezy Fit can provide to all our K System trained customers, a free of charge, fast tracked service direct to Kingspan for their U value & interstitial condensation risk calculation. But please note, Ezy Fit do not review, give advice or recommendations on the individual property, this is for the installing companies Retrofit team to confirm the property suitability for the K System.

U-value calculations must be performed in accordance with BS EN ISO 6946: 2017, using a method known as the 'Combined Method'. Calculations should also be carried out in strict accordance with the guidance issued in BR 443: 2006 'Conventions for U-value calculations' and should be undertaken by competent persons.

Installing the Ezy Fit K Insulated Dry Lining System

There are numerous ways that the Ezy Fit K Insulated Dry Lining system can be installed:

1) The system secured to pre-treated timber battens lined with DPC strips onto any dry, stable masonry construction

- Step 1 - Timber battens are fixed around the perimeter of the wall, openings, and services, then vertically at maximum 600 mm centres.
- Step 2 - All timbers are screwed with the DPC to the substrate using appropriate fixings. Fixings are made approximately 75 mm from the ends and positioned no more than 600 mm centres apart
- Step 3 - Timber battens must provide a minimum 19 mm bearing to support the board edge. The insulation board is cut approximately 5 mm short of the floor to the ceiling height, then located centrally over the timber battens
- Step 4 - The system is fixed with drywall screws located at 300 mm centres, reducing to 200 mm centres for external corners. Alternatively, the system can be fixed with plasterboard nails located at 150 mm centres. The length of screw or nail used should be at least 25 mm greater than the thickness of the system (22.5 mm when using 25 mm deep battens).

2)The system secured with dry wall adhesive and supplementary fixings onto fair-faced brick, block or concrete cavity walls or rendered (or equivalent) solid walls.

- Step 1 – A distance of 10 mm plus the thickness of the insulation board must be allowed away from the wall's high point and a line must be drawn across the floor. It must then be plumbed for alignment before transferring the line to the ceiling, extending to the room corners. A mark must be made on the walls at 1200 mm centres to indicate the insulation boards positioning
- Step 2 - A band of adhesive is applied around the perimeter, services, and openings. The adhesive must be approximately 25 mm in from the edge, to avoid bridging the joint.
- Step 3 – A full, continuous bed of adhesive (not dot and dab) is then applied.
- Step 4 – Insulation boards are cut approximately 15 mm short of the floor to ceiling height The boards are taped into position and supported by packers until the adhesive is set.
- Step 5 - Once the adhesive sets (generally 1.5 to 3 hours), a minimum of 6 appropriate fixings per sheet are added and positioned no less than 15 mm in from the edges. Fixings should be selected to provide a 25 mm penetration into the masonry wall.

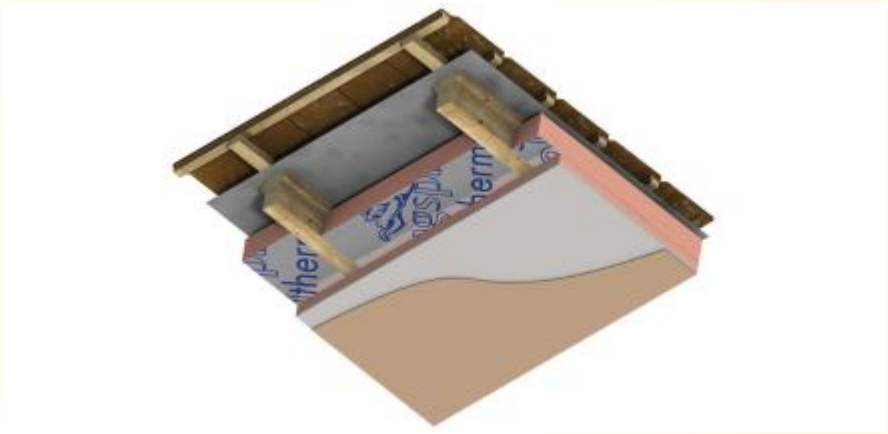
Additional Installation Procedures:

- Flexible polyurethane foam and/or flexible sealant or equivalent must be applied around the perimeter of the system where the board abuts adjacent surfaces, window/door frames, ceilings and floors.
- Window or door reveals should be insulated with a minimum thickness of 32.5mm
- At external angles, the system should be extended past the corner and the insulation cut back
- Where required, additional bands of adhesive, horizontal fixing T's, fixing straps, metal tracks/lining channels on timber noggins are placed to support unsupported board edges.
- For medium to heavy weight wall-mounted fittings, appropriate fixings are used to fix through the system into the masonry or timber noggins, steel fixing straps or plywood patressing.

Picture rails and Dado Rails- These can be fixed back onto the plastered finish with either silicon or Grab adhesive.

Installing the Ezy Fit K Insulated Dry Lining System in Room in Roofs

3)Roof dry lining system – the system fixed to timber rafters or ceiling joists



- Step 1 – Insulation board should be placed below the rafters with no air gap between the boards and the already existing insulation boards between the rafters or ceiling joists.
- Step 2 - The framing should be set at a maximum of 600 mm centres, and the framing should be wide enough to provide at least a 19 mm bearing in order to support each board edge. Noggins or straps will be required at the perimeter. When the joists/rafters are set at 600 mm centres, additional noggins or straps will be required perpendicular to the main framing in order to provide the necessary support for board edges
- Step 3 - The system should be cut to allow for a 5 mm height clearance and fixed using plasterboard nails located at 150 mm centres for timber only or drywall screws located at 230 mm centres maximum for timber or metal framing. Penetration depths into the framework should be a minimum of 25 mm for timber or 10 mm for metal.

Where residual loft spaces exist and can be accessed through existing or newly formed hatches in the studwork dwarf walls. A visual inspection of the areas should be carried out to check for the presence of either downlighters or high amperage cables, supplying cookers or electric showers

Should downlighters be present, these must be covered with fire rated downlighter covers, themselves then covered with a minimum of 300mm loft roll

Where high amperage cables are present, these must not be covered by insulation and should be left in position upon the top layer of insulation.

An assessment of the existing loft insulation depth (if any) should be made.

1. Loft roll should then be laid to an overall depth of not less than 300mm to all horizontal areas within the roof space, cross-laid to ensure joist heads are covered by the top layer of insulation.

2. Any other exposed horizontal timbers such as purlins should also be covered to prevent cold bridging

It is essential that the eaves of the roof space are adequately ventilated to prevent moisture build up and condensation. Having assessed the ventilation at survey stage, the installer should follow the recommendation of the survey and install, where necessary and required, the appropriate ventilation system

Any exposed pipework or water storage tanks must be insulated.

The residual areas must be insulated using a mineral wool product that complies with BS EN 13162, which is the British Standard for factory-made mineral wool products used in thermal insulation for buildings.

Now sit back and relax.

For further information please contact us on the details below

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