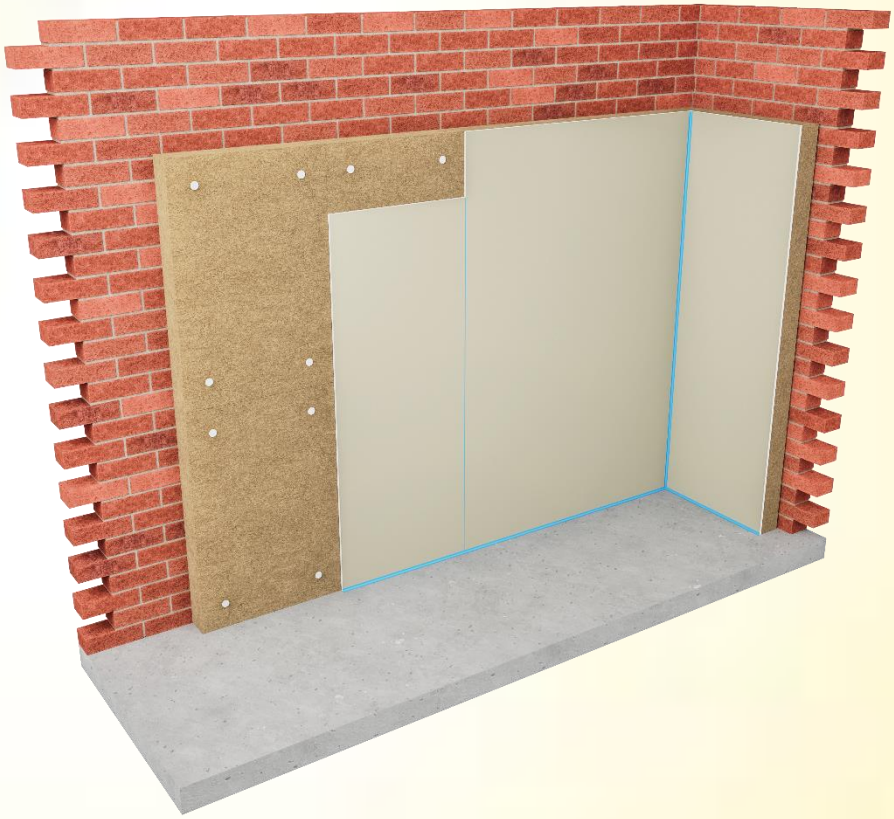
The Ezy Fit M IWI Internal Wall Insulation System Design Guide



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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

How to Insulate a Solid wall Home

There are two main ways to insulate a home that does not have cavity wall's or one that has a cavity wall that cannot be filled with traditional practices. These are homes that have been built with a timber frame that needs to breath to avoid wood used in the construction becoming damp and rotting.:

1-External Wall Insulation.

With this method the entire house is wrapped with an outer casing of Mineral wool or EPS (Polystyrene boards). Once wrapped a mesh and aggregate coat is built up to strengthen the protection of the insulation from the elements. This is a very attractive way of improving the desirability of the home as well as improving comfort levels and warmth for all of the people living in the home.

Costs can vary for the average home based on size and specification of the insulation and coatings used to insulate the property. The typical cost is upwards of £10,000 - £14,000 per home and will usually take a skilled contractor a minimum of one week to complete the work. Often planning permission is required to complete the enhancement to the properties façade and the insulation system cannot be applied in certain weather conditions.

2-Internal Wall Insulation

The M IWI System is an internal wall insulation system, so we will focus on this type of system within the Design Guide.

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 around 10cms 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.

How it works

The insulation is placed against the inside of the outer wall and then a layer of plasterboard is then added over the top of the insulation. 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.

The costs of the system are much lower than with external wall insulation as the system does not require external protection from the elements (unless you are in a property at risk of extreme weather) and work is carried out faster with an average property being treated in 2-3 working days. Likewise, the cost of internal wall insulation is less than 40% of its equivalent External 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 of the improvements are carried out on the inside of the house.

Internal Wall Insulation is often favoured when working on Government supported schemes to improve energy efficiency, as the lower cost makes insulating an average home more achievable and accessible to the person living in the 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
- No scaffolding is required to apply internal 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 significantly Cheaper to install than external wall insulation
- It is significantly 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.

BEIS Best Practice Guidance

We cannot talk about internal Wall Insulation without mentioning the BEIS Best practice Guidance that was released in 2021 and guides Energy Efficiency Scheme participants in best practices for both installation and avoidance of future issues by suggesting which internal wall insulation systems are preferred and methodologies behind applying those insulation systems.

The Ezy Fit M IWI system complies with the System Design side of the BEIS Best Guidance Practice and as such is suitable to use on any Government backed Energy Efficiency Schemes in place.

Systems that fall into this "favoured" category can usually also attract a 25-year Insurance Backed guarantee which is essential for all energy efficiency schemes of this nature. This would be applied for by the Company installing your insulation system.

The Ezy Fit M IWI System

Ezy Fit have historically supplied a tailored Room in Roof Insulation to the trade which carries its own certificate as issued and managed by KIWA. As part of this system, we applied insulation to the inside of the outer brick walls of a top floor room as well as applying insulation to the gable end of a property.

Our System is thought to be such an improvement on traditional Room in Roof Insulation Systems that it was awarded an "innovation" status in 2020 by OFGEM. This means that when applied under an energy efficiency scheme it can attract an uplift of 25% to its funding value, under the Government supported ECO scheme.

Whilst the system was initially designed for rooms within roofs, it has been tested thoroughly on brick and solid walls and as such there are no differences between insulating a solid wall that is on the top floor of a house compared to a solid wall on the ground or first floor of a house.

We only stipulate that all insulation must be installed above a working damp proof course or as it is known as a DPC.

The system comprises of:

1. High density mineral wool insulation, which is applied to the interior lining of an external wall
2. Fixings that are made specifically for high density mineral wool insulation
3. Specially designed reveal board for windows and confined spaces which will not allow a Mineral wool, insulation slab to be placed.
4. Over the top of these elements a contractor would fit 12.5mm plasterboard with our tailored fixings
5. With these component parts are a specially designed silicon that is identified by its blue colour and is high mortality
6. We recommend that the system is then finished with a minimum of 5mm plaster

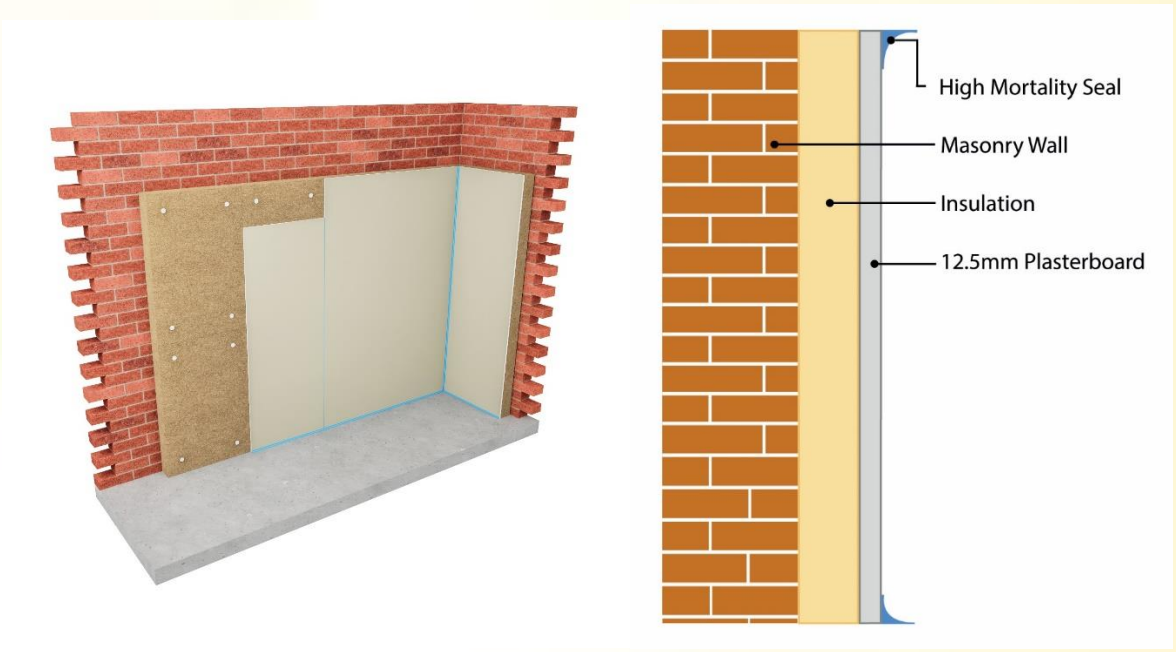


Diagram showing system components in situ.

Moisture Control		
Test	**Standard**	**M-IWI Slab**
Water vaour transmission	BS EN 12086, Method A	NU1
Water vapour resisitance (m2sPa/kg)	BS EN 13950	
Fire Performance		
Test	**Standard**	**M-IWI Slab**
Reaction to fire classification	BS EN 13501-1	A1
Thermal Performance		
Test	**Standard**	**M-IWI Slab**
Declared aged thermal conductivity (W/mk)	BS EN 12667	0.036

Benefits of using an Ezy Fit M IWI System

- ✓ Cost effective solution
- ✓ Quick and easy to install, up to 50% faster than similar IWI systems
- ✓ Can improve the acoustic qualities of a home meaning a quieter and warmer home
- ✓ We recommend finished using a 5mm plaster skim as per BEIS Best Practice Guidance
- ✓ No need to remove existing wall finish, unless it is unsound
- ✓ The system can work with walls that are not quite square and thus imperfect
- ✓ Easy to adapt around windows and openings
- ✓ Can easily accommodate fixings
- ✓ No need to add studs or cut prefabricated studs to length, thus reducing on site waste
- ✓ No metallic frames thus reducing the risk of thermal bridging and specialist tools
- ✓ Minimal number of component parts required, thus making ordering components easy
- ✓ Waste is reduced through multiple use of the same materials
- ✓ The airtight system enhances performances as per the BEIS Best practice Guidance
- ✓ Mineral wool slabs have an A1 fire rating
- ✓ Materials supplied by Ezy Fit have the flexibility of supply source so no need to worry if one manufacturer increases their prices above another.

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.

Any damp present should be eradicated prior to insulation being added to a property and the correct ventilation being added will ensure a comfort level is enhanced within the building whilst maintaining building maintenance. We always recommend using a fungicidal wash on the wall prior to installing an 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 using Storm Dry brick cream as that will assist with keeping the outer walls dry.

The Ezy Fit M IWI system uses water repelling insulation across the entire wall and as such this insulation will not absorb damp or water.

Interstitial condensation is avoided with the Ezy Fit high-quality sealant and a minimum of 5mm of airtight plaster finish.

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. We recommend installing M IWI between the ceiling and floor area of the first floor along the length of the external wall to avoid any further cold bridges.

Areas of Limited Space. To assist with these areas, you can also use Ezy Fit reveal board which assists in areas where the standard M IWI Slab cannot physically be used. We always recommend using a full M IWI slab in all cases but understand there are limitations to space at times and using a reveal board is far better than no insulation at all. We recommend a full bed of adhesive plus mechanical fixing be used if a reveal board is the only solution due to space issues.

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 M IWI 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 M IWI 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.

Flues – Care must always be taken to ensure that flues and ventilation measures for all appliances are not blocked or in any way compromised. The makeup of Ezy Fit M IWI Wall slab means they can be placed next to the outer side of a flue but should never compromise its operation. Always check with the manufacturer if in doubt.

Damp Proof Couse (DPC) – The Ezy Fit M IWI System should always be installed above a working damp proof course. In no way should the M IWI wall slab 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 the Ezy-Fit M-IWI system can advise on generic information each building needs to be separately assessed and evaluated for best possible solutions.

Acoustic qualities of the Ezy Fit M IWI system. The M IWI slabs fitted to a wall improve the comfort of a wall by reducing noise however when using reveal board there is the potential of reducing the original acoustic qualities of a wall through vibration. In instances where acoustic performance is reduced, we would recommend a mineral wool thermal laminate board be used. Ask Ezy Fit and we will be able to supply these readily.

Before installing the Ezy Fit M IWI 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.

Where the inner surface of the wall has a plasterboard that has been “dot and dab” application please remove this before starting to avoid trapping any damp that is already present. Remove skirting and radiators as required.

Installing the Ezy Fit M IWI system

- Step 1 – Mark the position of any pattress boxes on the M IWI Slab and drill to allow any electrical cabling to be brought forward – Using a qualified individual
- Step 2 -Fix M IWI slab to the wall using 130mm M IWI fixings. One to each corner of each slab section at a maximum of 100mm from each edge, ensuring any cabling that is being brought forward has been allowed for via a pre-drilled hole.
- Step 3 – Create a recess in the M IWI Slab allowing any pattress boxes to be fixed into place, ensuring a minimum of 20mm of insulation remain behind the outer surface of the electrical outlet to reduce cold bridging. Install window reveal boards as required
- Step 4 – Fit a 12.5mm plasterboard (BS EN 520) to entire face of M IWI slab using M IWI Plasterboard fixings (minimum 150mm), directly through the M IWI Slab and into the substrate.
- Step 5 – Seal all planes, edges, and joins of plasterboard using M IWI sealant (blue in colour) to prevent air leakage
- Step 6 – We recommend a minimum of 5mm plaster coating is applied to the plasterboard to increase air tightness.

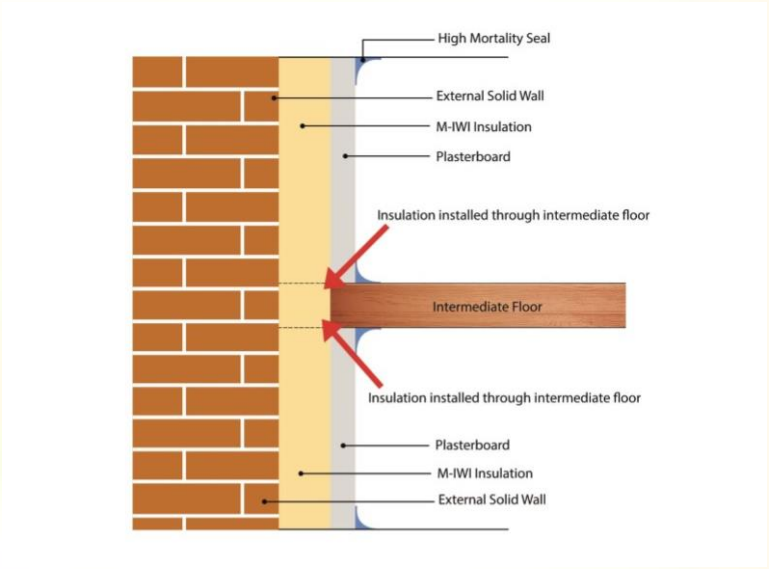
Fixing Radiators – All fixtures can be re-fitted to the masonry wall with the appropriate length screw through the M IWI Slab.

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

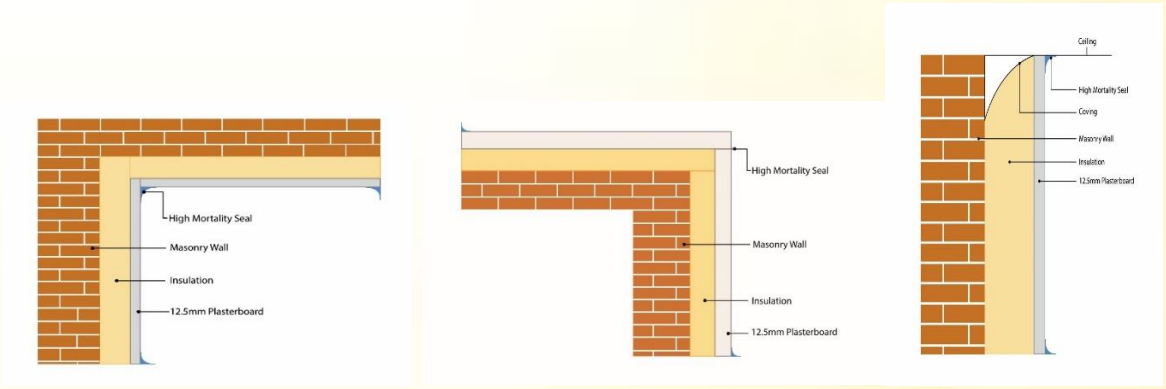
Pictures and light weight fixings – Can be fitted using the relevant plasterboard fixing.

Electrical Cables – These are usually within the wall however these can be pulled through the M IWI Slab to surface mount the sockets. Cables with a high amp rating such as cookers, electric car chargers and showers need to be routed with the knowledge of a fully trained Electrician

First Floor Suspended Timber Floors - Where possible, the area below the suspended timber floor on the first floor only, and adjacent to the external solid wall should be insulated to mitigate any cold bridging that could occur in an unisulated area.



Standard Details – When encountering internal corners, external corners, or even wall details such as coving, the Ezy Fit M IWI system is adaptable and can be installed just as fast and easy.



Now sit back and relax.

For further information please contact us on the details below

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