SIMPLE INSULATION SOLUTIONS
Getting it right on site

Wall Insulation

The main reason we install insulation in our homes is to reduce our outgoing energy costs and to create a comfortable living environment, therefore it is most important to specify the correct insulation at the design stage of the project. When you are self building your own home you have the added advantage of choosing the correct insulation and overseeing the project to ensure the insulation is fitted correctly. Inspection of the insulation application during the construction stage cannot be taken lightly as it is key to achieving the desired thermal performance of the building. When designing a thermally efficient home to achieve a good Building Energy Rating the insulation along with the breathability of the construction and the vapour/moisture management is the single most important building product to be specified as it not only saves energy it can also play a vital role in the protection of the structure. Remember if the insulation fails due to incorrect application or being poorly specified all the other components such as the high energy efficient boiler and the heating systems have to work harder to maintain the desired temperature. The insulation the vapour management and the breathability of the structure are all part of system building and should be specified at the same time.

Who is going to install the insulation ?

Before you have the insulation installed take the time to go through the application process step by step with your builder and ensure everyone on site is fully aware of the importance of correctly fitting the insulation but most importantly the consequences of getting it wrong. In most cases you will be told sure I have been fitting insulation for years, Trust me it is well worth while to take the time and go through the fitting process as this will remove any uncertainties that may arise .

Cavity wall insulation

When applying rigid cavity wall insulation, partially filling the cavity, the insulation board should be fitted tightly to the inner leaf of the cavity wall with zero space between the two and all the joints tightly closed together. If there are gaps in the insulation and there is cold air movement from the cavity permitted to flow between the insulation and the inner leaf of the cavity wall. YOU HAVE NO INSULATION

Cavity wall insulation

These images were taken in August 2010 (New) build

In this particular case the applicator failed the product and yes this builder has many years experience. Application details are available from all insulation manufacturers to down load on the internet or alternately call into your local builder providers for a copy

On paper this particular cavity wall was showing a U value of 0.27 with a build up as follows
External
20mm Sand and cement render
100mm Dense block
40mm Low-emissivity cavity R value = 0.644
60mm Polyisocyanurate (polyiso) foam insulation
100mm dense block
12mm Sand and cement render
Internal

In reality this type of application will provide a U value of 1.61 with a build up as follows

External
20mm Sand and cement render
100mm Dense block
40mm cavity R = 0.18
00mm Polyisocyanurate (polyiso) foam insulation. **Due to the poor quality of the insulation application**
100mm dense block
12mm Sand and cement render
Internal

People fail products -Products do not fail people

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Drylining Internally

One of the simplest ways to insulate a solid block or cavity block (hollow block) wall is to dry line the walls with insulated plasterboards (thermal boards). The insulated plasterboard can be mechanically fixed using a combination of nylon and metal mushroom fixings. It is important to note that when fixing the insulated plasterboard directly to the block work with all metal fixings you will have to increase the thickness of the insulation by 10mm to 15mm depending on the insulation product type selected, this is due to the thermal conductivity of the metal fixings. The recommended number of metal fixings is 3 per board with the remainder of the fixing being nylon or plastic type 18, total number of fixings per 1200mm x 2400mm board is 21. The 3 metal fixings are installed as a precautionary measure that in the event of a fire they will continue to secure the board to the wall.

The insulated plasterboards must be fitted continuously from ground floor level through the ceiling space covering the entire surface of wall area and finish above the attic space to ensure there are no gaps in the insulation. Alternatively the area between the ceiling joist can be insulated with a glasswool or rockwool insulation filling between the ceiling joist one meter in from the external walls to prevent thermal bridging. There should be no gaps between the floor and the insulated plasterboard as this can cause heat loss through convection.

Where the insulated plasterboards are dot and dabbed with bonding compound to the wall, fixings are still required.

In the case of the insulated plasterboard not being fitted tightly to the ground floor, the gap must be filled with fire rated expanding foam or Glasswool insulation this will reduce the risk of heat loss through convection as the warm air will flow freely behind the insulation and render the insulation useless.

The correct application guides are available for the different types of application I would strongly suggest you read them before the insulation works commence.

As you can see from these images the insulated plasterboards were not fitted tightly to the ground floor this is common place. Where you do not have tight fitting insulation any where in the home your energy costs can be up to 20% higher than where they should be.

Remember insulation is the only building product when fitted correctly that will give you a good return for your money.
In my line of work as an independent insulation consultant almost every day I am asked to provide a cheaper option.
My answer is always the same - **The cheaper option is not always the long term cheapest solution**.
Cheaper insulation fitted correctly will out perform expensive insulation fitted incorrectly therefore the bottom line is always produce a written insulation specification to include fitting instructions before you start to build.

There is only one sure way to produce a high end Energy Efficient home.

1. Over specify the insulation. It will pay off
2. Thoroughly inspect the insulation application
3. Understand the product not the brand

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