

# Factsheet

## Insulation - V1

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Insulation is the single most important aspect of any building. It is the easiest way to reduce any buildings heating costs and as energy prices spiral, fitting good quality insulation will save energy, reduce fuel bills and reduce carbon emissions. Good quality insulation has the fastest payback of any energy saving measure that can be fitted to a building.

Upgrading the insulation of any building should always be the first step before considering any renewable technology, particularly heat pumps. Do not look to renewable technology to compensate for poor insulation.

Only the best insulation should be fitted such as [www.celotex.co.uk](http://www.celotex.co.uk) or [www.kingspan.com](http://www.kingspan.com) Contrary to popular belief, mineral wool, fiberglass or polystyrene insulation are not particularly good insulators and we would not expect them to be used in new or renovated buildings. Other products such as Thermafleece can be used in some areas. This is a low embodied energy insulation product [www.secondnatureuk.com](http://www.secondnatureuk.com). As a minimum the buildings insulation level should be bought up to current standards and ideally should be increased above this.

For example any cavity walls in existing buildings should always be filled wherever possible. However this will not make an existing building well insulated and additional insulation will still need to be fitted. Many existing buildings (except some Listed buildings) can become well insulated by adding insulation on the inside (or outside) of the walls, on the floors and in the roof.

It is generally accepted that a well insulated building would be considered to have about 100mm of good quality insulation (Celotex, Kingspan or equivalent) in the walls and floors, and about 200mm in the roof. A very well insulated building would have levels higher than this.

It is important that heat pumps are only installed in insulated buildings, this is because the lower the flow temperature from the heat pump, the higher it's efficiency. In a poorly insulated building a higher flow temperature is required meaning the heat pump will cost more to run and have higher carbon emissions. If the building is very poorly insulated the heating distribution system (due to the low temperatures from the heat pump) might not be able to provide sufficient heat into the building and the occupants will feel cold.

### Facts at a glance:

#### Heating Bills

Good quality insulation will reduce your energy bills and hence carbon emissions.

#### Insulation versus renewables

Insulation is always the first step. Do not look at renewables to make up for poor insulation.

#### Well Insulated Building

A well insulated building should have 100mm of quality insulation in the floor and walls and 200mm in the roof.

#### Existing Buildings

Existing buildings can become well insulated by adding additional insulation on the inside (or outside) of the walls, on the floors and in the roof.

#### Insulation and Heat pumps

The efficiency of a heat pump is dependant on the outlet flow temperature, the higher this is the lower the efficiency of the heat pump. In a poorly insulated building a higher flow temperature is required, hence the running costs will increase.

If the insulation is poor the heating distribution system might not be able to provide sufficient heat into the building at the temperatures produced by a heat pump.