Loft insulation and insulating flat roofs

Insulating your loft properly is probably the most important single thing you can do to keep warm and save money. Houses typically lose 35% of their heat through the ceiling, so this is a great place to start. See Factsheet No. 1, *What Makes a Home Warm?*

❖ Loft insulation

- The Energy Savings Trust recommends a minimum 270mm of mineral wool insulation. Other products may need different depths.
- The insulation can be fitted as a roll, placed between roof joists or, alternatively, there are loose fill products for inaccessible corners. For more advice see: https://energysavingtrust.org.uk/home-insulation/roof-and-loft
- Recessed lights need to be covered with insulation but, because they can overheat and become a fire hazard, a proper fire rated box should be used. See Energy Factsheet No. 20, *Recessed Lights Insulation*.
- Be careful not to block ventilation into the loft from the eaves. Insulating the loft will make it cooler, meaning moisture will condense more often. If the loft isn't properly ventilated this could lead to a build-up of damp. As you could be making the loft cooler, you should also check insulation on pipes and water tanks and add more if necessary.
- The loft hatch should also be insulated and it's best to fit a draught excluder around it as well.
- If your loft insulation was installed some time ago it is likely that it is fitted between the joists, probably at a thickness of only 100mm, as was normal at that time. In this case a minimum of an additional 170mm should be added.
- If you need to store items in your loft and use loft boards to do this, you may think it could be a problem adding additional insulation to make up to 270mm minimum thickness. There are however products that fit on the existing joists and provide supports for a raised loft floor, allowing for extra insulation (see photos overleaf).

The Rural Community Energy Fund

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Examples of raised loft floor supports
Images courtesy of: https://www.loftzone.co.uk/storefloor/ and https://www.loftleg.com/loftleg

❖ Insulating flat roofs

If you have a flat roof more the 10 years old, it's unlikely to have as much insulation as you would like. Older flat roofs can be very cold.

- Treating these can be difficult and care is needed to avoid creating problems of damp from condensation.
- One of the easiest and cheapest options is to use a flexible insulated liner, such as Sempatap Thermal, see: http://www.mgcltd.co.uk/sempatap-thermal
    - This is stuck onto the underside of the ceiling and can then either be plaster skimmed or decorated direct.
    - It is easy to fit with limited disruption, but has limited insulating properties and may not on its own bring your roof up to modern standards.

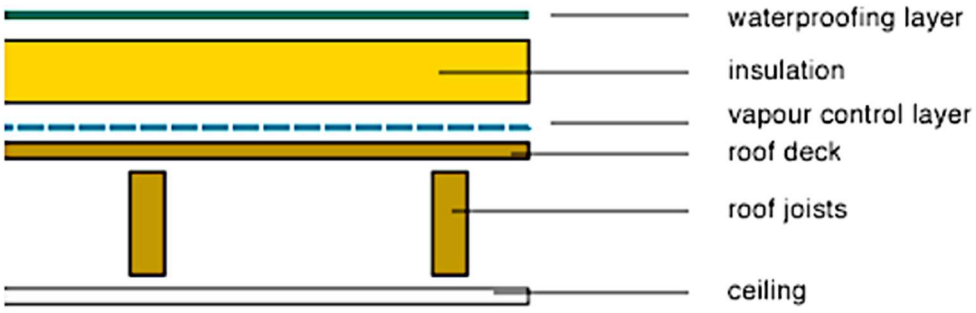
Fitting Semptap Thermal (shown on a wall but can be used on ceilings)
Image courtesy Image courtesy of http://www.mgcltd.co.uk/sempatap-thermal/

- Better results can be achieved using the 'cold roof' approach.
    - This involves removal of existing plasterboard and replacement with a layer of insulation added between the joists above the new internal ceiling layer.
    - This reduces warmth penetrating the roof and therefore cools the underside of the external layers.

- The 'cold roof' approach is more expensive and disruptive than adding a liner.
- Moreover, unless there is certainty regarding the application of a vapour proof layer or the presence of an effective ventilation gap above the insulation, this cooling can lead to 'interstitial condensation'. In this case, water vapour migrates into the roof structure and condenses on the underside of the cold outer layers. This can lead to potential damp and rot problems with supporting wooden joists.

➢ The 'warm roof' option is the least internally disruptive method, and avoids the problem of interstitial condensation.

- In this technique, the existing deck is retained and insulation is added to the outer surface. The existing membrane becomes the vapour check layer, with additional insulation and a new waterproof external layer (see the diagram below).
- External insulation is potentially expensive and requires some knowledge of the structural integrity of the roof.
- Judging whether this option is a viable investment is difficult and it may not be financially justifiable purely in terms of reduced energy costs. It may however, be a reasonable investment for maintenance of the flat roof.



Example of 'warm roof' system for flat roofs
Image courtesy Image courtesy of: http://www.greenspec.co.uk/building-design/timber-flat-roof-insulation/

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