

Insulating Solid Walls

27th June 2013

Transition Cambridge Renewable Energy Group



Quick Facts

What are U values?	U-values for walls, windows, roofs etc. tell you how much heat you can expect to lose through them. The units are watts per unit area per degree temperature difference. Low values are good. A solid brick wall is likely to be around 2.1. After insulation it should be 0.3 or even lower – a reduction of over 80%.
How much will I save on my energy bills?	Not all your heat loss goes through your walls and not all you gas is used for heating so you need to take this into account to work out how much you will save from solid wall insulation. There are some interactive tools to help you such as our home heat loss model at http://www.transitioncambridge.org/housemodel
How much insulation do I need on my solid brick wall?	If you insulate more than 25% of your wall then building regulations apply and the required standard is a U value of 0.3, where practical. The thickness of insulation needed for this depends on the material. For example, 100mm Celotex or Kingspan type material would reduce the U-value of a solid wall down to around 0.2. 100mm of Pavadentro (wood fibre) or Thermafleec (wool) would get you to 0.35 or you could use 50mm aerogel, if you can afford it. If space is at a premium you might use 40mm ThermaLine Plus (for internal insulation, including plasterboard) which should give you a U-value of 0.65. Just 19mm of Magnaline SuperSlim (aerogel and board) would halve your heat loss.
Should I insulate inside or out?	External insulation is usually less disruptive and keeps the walls warm and dry so there is less concern about moisture. However you may need to extend your eaves and it is disruptive to external plants, as well as pipework. You will need planning permission if you change the appearance of your house. Internal wall insulation loses some floor space and is disruptive to internal cabling but does not change the external appearance of the house. Moisture problems can be minimised if you use a breathable solution, though it is likely to need more thickness of insulation.
What is Thermal mass/inertia and why does it matter?	If you have external insulation then your heating system will be heating your walls, which takes a lot of energy. This means they have a high thermal inertia and it will take a while for your heating system to heat your house – but the house will retain that energy for a long time. In summer, the insulation and thermal inertia will help keep your house cool. If you have a low thermal inertia, if you insulate on the inside, then your house will heat up quickly in winter, saving on fuel bills. But it will also warm quickly in summer.
What is the Green Deal/ECO?	The Green Deal is a government scheme for improving your house to use less energy. Assessors and providers have extensive training and are audited so they should be reliable and competent. The Green Deal assessment will make recommendations for your home and finance is available through a Green Deal loan or a grant from the ECO (Energy Companies Obligation). You must go through a Green Deal provider to get an ECO grant. Fortunately, solid walls are classified as hard to treat and you can get a grant for them regardless of your income – this is not means tested.

Links:

Transition Cambridge Energy Group (including insulation advice and the home heat loss model)	http://www.transitioncambridge.org/energy
Energy Saving Trust	http://www.energysavingtrust.org.uk/Insulation/Solid-wall-insulation
Green Deal	https://www.gov.uk/green-deal-energy-saving-measures/how-the-green-deal-works (or just go to www.gov.uk and search for green deal)
ECO (for grants)	http://www.ofgem.gov.uk/Sustainability/Environment/ECO/Info-for-Domestic-Consumers/Pages/index.aspx
Cambridge Carbon Footprint	http://cambridgecarbonfootprint.org/
CCF Climate Friendly Homes surveys / thermal imaging camera training	http://cambridgecarbonfootprint.org/action/climate-friendly-homes-project/

On your panel today

- Craig O'Donnell (National Refurbishment Manager Knauf Insulation Ltd)
- Frank Hensman (L. H. Plastering - Weber Approved Installer)
- Margaret Reynolds RIBA - architect (independent consultant, formerly with AC Architects)
- Nicola Terry Householder with internal insulation (replacing Martin Bonner), energy consultant
- Spencer Hagard Householder with external insulation

Transition Cambridge

www.transitioncambridge.org

Transition Cambridge (TC) is a network of volunteers in Cambridge based on the Transition Towns model. TC aims to promote community resilience to the twin challenges of rising energy prices and climate change.

TC has special interest groups such as energy, food, farming, permaculture, nature and story telling. TC projects include:

- **Household Energy forums** – question and answer sessions similar to this one but focussed different topics
- **Community Gardens** making beautiful and productive spaces for everyone to use
- **Community Supported Agriculture** (Onion Cropshare)
- **Community Bakery**
- **Grow Zones** - teams working together applying permaculture methods to our gardens

TC has a weekly newsletter with events and news from TC and other organisations with similar aims. You can sign up by filling in the form at the bottom of the feedback form or online.

Other events you may be interested in

Saturday 2nd November Warm Homes in Mill Road

Neighbours and experts will show you ways to improve the efficiency of pre-1920s solid wall homes common to the terraces around Mill Rd. For more information go to www.cambridgecarbonfootprint.com