

OPINION

Climate Action

Tim Claydon
Harborough Climate Action

Energy-saving windows: An explanation of how they work.

The proportion of heating energy lost needlessly from windows varies greatly between buildings and users. For domestic houses it can range between about 30 per cent for those with single glazing to about 10 per cent for those having multilayer specialist glazing.

The size and compass direction of windows are key factors, as are curtains and shutters. For comfort, it is important to reduce internal currents of colder air falling down the inside of windows and moving around feet and ankles!

Properly constructed



framed multi-layered windows are vital for all buildings and should be essential features of new buildings.

Orientation and size should

be design features, especially for useful solar heat gain from Autumn to late Spring when sunshine arrives at low angles directly on to surfaces.

It is a disgrace that new houses, especially those on estates, are constructed without such characteristics. Care about orientation is also vital for rooftop solar electricity generation.

The British Fenestration Rating Council has a scheme for rating framed windows, see bfrc.org/energy-performance. The diagrams and explanations here are very useful. Likewise, the Energy Saving Trust at <http://energysavingtrust.org.uk/advice/windows-and-doors/>.

Installing a secondary window frame with single glazing inside present windows

(secondary glazing) is likely to be the cheapest and perhaps the best option for established buildings. Major benefits are noise reduction from outside and the option of better ventilation control.

Glass is an amazing material, mass produced cheaply from mainly sand and limestone to form a stable and hard 'supercooled liquid' that is solid without crystalline structure or distinct melting point. This material transmits visible light, but not the infrared 'heat' radiation from warmed objects, hence its beneficial use in glass houses. Polythene does not have this selective property.

The British company Pilkington patented mass production of perfectly smooth-surfaced sheet glass over molten tin, on to which thin films of specialist chemicals can be added. For example, the production of 'K-glass' that reflects infrared (heat) rays, e.g. back into a room.