How Windows Help Your House Stay Warm

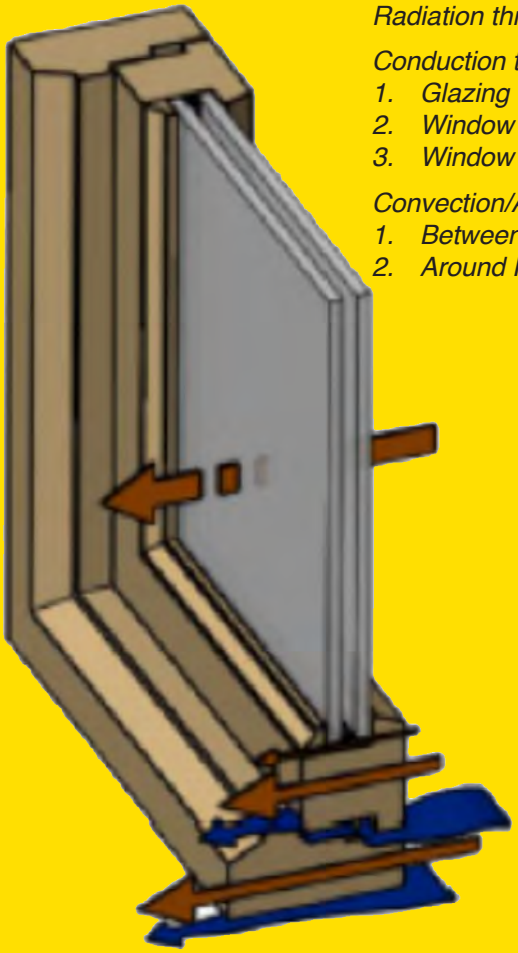
The size of your windows and where they are positioned in your house is a big contributor to the amount of heat that is gained from solar radiation. So designing the placement of the windows, buying the right type of windows and most importantly – making sure they are installed correctly! – are critical decisions when building or renovating your home.

Solar radiation enters through the glass part of the window before being absorbed by elements in the room such as the floors and walls, which in turn heat up. These elements will then give off heat which can be positive during winter.

To avoid overheating in the summer, shading along with specialised types of glazing can be used to control the rate and impact of solar gains, as well as helping to maintain the optimum amount of daylight for natural lighting. Different kinds of glazing can be used to draw the sun's heat into the interior, reject it, or allow interior heat to escape.

The number of panes of glass, internal coatings, colour tints, gaps and gasses between panes, all affect daylight and radiation transmittance. It is important to note that windows responsible for large solar gains (bringing in lots of heat) during the daytime and during summer may also be responsible for significant heat losses during night time and during winter, so thinking about window coverings is also important.

In Ireland, solar gain is optimised by positioning living area windows to face south, which maximises the potential heat gain where it can be most useful. Shading can then be used to block excess sun at warmer times and allow the sun's heat in at cooler times. To help you get the most benefit from your windows, your designer should work to maximise solar gain within your building in the winter to reduce space heating demand. However they also need to consider how to control solar gain in summer so that there is limited overheating. You may laugh at this but even in damp rainy Ireland, if your house is correctly built to current building standards it can overheat in the summer if there is excessive glazing facing south without summertime shading.



Radiation through glazing

Conduction through
1. *Glazing Spacer*
2. *Window Sash*
3. *Window Frame*

Convection/Air Leakages
1. *Between Sash & Frame*
2. *Around Frame*

Heat loss through a window