PASSIVE HEATING

Reduces fossil fuel use & adds resilience

1. INSULATE - STOP HEAT LOSS

Examples in increasing order of cost :

- put thermal curtains over draughty doors and windows (even triple glazed windows pass 10 x more heat out than a well insulated wall) or use thermal blinds

- put draught excluder around opening windows

- insulate the loft and every possible wall that you can insulate and consider insulating under the floor on the ground level

- install new external doors with good seal.

- install double or triple glazing

- consider a porch if none exists, or a new extension or a complete rebuild to modern standards of insulation

New build house with high level of insulation and triple glazed windows

2. CAPTURE ENERGY FROM THE SUN (Solar gain)

Examples :

- orientate new builds or extensions to have one big south facing wall with large windows. The large windows act like a greenhouse and capture heat into the building

- make sure south facing windows are large, but north facing windows are small

- use the room with the best solar gain the living room for most daily activities

- pay attention to the roof overhang and shading - on large south facing windows the overhang ensures the room does not overheat in the summer

Granite cottage with south facing solar gain in extension

- Insulation without a Mechanical Venitlation and Heat Recovery Unit (MVHR) can lead to mould or heat loss via trickle vents/bathroom fans

- You need a good reliable installer who knows the technology (in particular for solar thermal as tank size is very important)

- Watch that other trades do not undermine air-tightness by cutting holes through airtightness barriers

- MVHR difficult to retro-fit

- Solar gain is free!

- Insulation is a cheap and cost effective measure

- Solar thermal is relatively cheap to install

- A MVHR unit delivers wonderful air quality and ensures there is no mould in the house

- NE Scotland with its wide arc of travel by the sun is a great place for solar gain.

3. MANAGE THE AIR FLOW AND RECOVER THE HEAT

This technique is much easier in a new build - it's difficult to retro-fit. It follows this sequence :

a) The house is built to a high standard of air-tightness. Windows have no trickle vent to ensure good air-tightness

b) Include porches to reduce heat loss from external doors

c) Desired flow of the air around the building is designed and facilitated by specified gaps under doors

d) A Mechanical Ventilation and Heat Recovery unit (MVHR) is installed and the air flows are checked

The MVHR draws air in from outside and pipes it around the house. Before it vents it to the outside it exchanges heat with the incoming air through a heat exhanger, saving the heat from being lost outside.

This unit contains the heat exchanger, fan and filters for the air.

4. USE "BLACK BODY" SURFACES

Objects that are coloured black more readily absorb and radiate heat which is why most wood burning stoves are coloured black.

This can be used to help heat your hot water by using thermal solar panels. These contain a fluid in dark tubes that picks up heat from the sun and transfers it into your hot water tank.

Dark coloured stone floors can also be designed to absorb excess solar gain and release it in the evening when the temperature of the room falls.

Solar thermal panel

www.futuregroup.org.uk

www.climateweeknortheast.org

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