



Renewable Energy: The facts.

Passive Solar design

This is one of the longest-standing uses of the sun, and one which we also seem to keep forgetting!

The principle is simple:

If you collect the sun's heat via a large glazed area (facing due South or pretty near it) and store the heat in *thermal mass* (something dense, like concrete, water or brickwork) the heat will transfer to the space inside the building as the temperature drops. The tendency of *thermal mass* to 'suck in' heat also plays a part in preventing overheating of buildings in hot weather, and may avoid the need for costly and environmentally unfriendly solutions such as air conditioning. Large overhangs on roofs also prevent summer overheating while allowing low winter sun in.

Passive solar does not include 'active' elements like solar water heating or solar electricity (photovoltaics, or pv).

Why don't we design all our buildings to make use of *passive solar gain*?

I wish I knew! A number of ancient civilisations used passive solar design both to collect heat and to prevent overheating, but as house-building has become a volume industry we seem to have forgotten the lessons learned by our ancestors.

Part of the answer probably lies in the way our housing developments are designed. From the 1970s onwards, the courtyard development has been very popular: small clusters of housing around courtyards which accommodate yet discourage the car, making a safe space for children to play, and a relatively small 'defensible space' for the residents. Well we can't have our cake and eat it! We can't have our houses around a courtyard, yet have them all facing south! Nevertheless careful layouts and house designs can give a courtyard design where all the houses have orientations between West and South. An excellent example of this exists in Sheffield.

Another part of the answer lies in cost: While a large proportion of houses is built by volume house-builders building for profit, a 'luxury' such as a passive solar 'collector', or 'sunspace' (or conservatory) is unlikely to be added. Yes, conservatories are sometimes included, but for it to have any effect as a passive solar 'device' it must face the right way, it must incorporate *thermal mass* to collect the heat, and it must incorporate provision for shading. Simply to add a glass room to an existing house can considerably worsen its energy performance, not improve it as correct passive solar design can do.

For further advice on this and other renewable energy technologies contact SYEC on 0114 2584574 or nick.parsons@syec.co.uk