

EVERY HOME CAN BE PASSIVE SOLAR

EARTH FIRST ARTICLE

By Brian Phillips

Why go passive solar?

Passive solar designed homes make efficient use of natural climate conditions to maintain thermal comfort. They therefore rely less on expensive greenhouse gas emitting systems to provide an even, consistent temperature. Through the intelligent combination of orientation, insulation and controlled ventilation, the householder can significantly improve comfort, reduce heating and cooling requirements and reduce greenhouse gas emissions through reduced energy use.

Orientation

Orange is located in the cool temperate weather zone. It is therefore very important that any house built in this zone has the daytime living areas facing north, to take advantage of the winter sun.

Living areas and the kitchen are the most important locations for passive heating as they are used day and evening. Bedrooms require less heating. It is easy to get warm and to stay warm in bed.

Utility and service areas such as bathrooms, laundries and garages are best located to the west or south west to act as a buffer to hot afternoon sun and the cold westerly winds common in winter, or to the east or south east as a buffer to the hot morning sun.

Passive heating and cooling methods

The passive solar effect of northerly orientation can be further enhanced by maximising the number of windows facing north, thereby allowing the sun to stream into living areas. The heat retained can be increased through the use of double glazing. South facing windows could use 'Eglass'.

Dark tiles or dark concrete floors exposed to the sun will further assist the passive solar effect through absorption of heat from the sun's rays.

To prevent heat loss it is important to make sure that all rooms, windows and doorways are sealed against draughts and that insulation is included in ceilings, walls and under timber floors.

Effective strategies for summer cooling are the shading of north windows from the summer sun with deciduous vines/creepers, adjustable louvers, removable slats or a choice from the variety of shade sails which are currently available.

Controlled Ventilation

Draughts are caused through convection, which is the movement of air created through heating and cooling. Unwelcome draughts can be avoided by designing floor

plans and furnishing layouts so that draught free nooks for sitting, dining and sleeping are created.

Ceiling fans provide an efficient way to circulate warm air evenly in rooms, and push it down from the ceiling to living areas. They are also useful cooling aids for summer.

Appropriate insulation is also effective in minimizing draughts and the movement of cold air in winter. Some convection will still occur, as it is a major means of passive heat distribution in any home. Where air movement is desired, floor to ceiling doors are effective in maintaining the distribution of heated air.

Fitting pelmets over all window curtains will also improve ventilation by reducing condensation and will cut down heat loss. External insulating blinds are even better.

Further information about passive solar design and many more useful home energy tips can be obtained at www.yourhome.gov.au/technical/index.html

Next environmental event:

F.O.O.D Week from April 17 to April 26 promotes local produce, which is important for us all. By accessing local produce we can support local industries and reduce our carbon footprint through the reduction of 'food miles' from the paddock to the plate.