



Architects Advisory Service

Your Home – Energy Wise Living

An energy-wise home is a great home to live in as being energy wise can save you money, enable you to live comfortably year-round and reduce your impact on the environment.

There are three factors to consider if you want to create a comfortable home in which to live: the season, the surrounding environment and the local climate. The key to year-round comfort is passive solar design. This is where a highly-trained architect carefully combines materials, construction methods, building form and the sun's natural energy to help keep your house cool in summer and warm in winter.

To achieve energy-wise living, your Archicentre Australia architect will consider: climatic conditions, prevailing local conditions, site orientation, the zoning or location of the rooms in your home, materials and construction techniques.

CLIMATIC RESPONSE

Australia has three primary climates, hot and humid, hot and dry and temperate. The climate plays a central role in housing style and selection of building materials.

LOCAL CONDITIONS

Natural features of the surrounding suburb or region also impact on the site. There are factors which are intrinsic to the form the building will eventually take, such as the slope of the land, adjacent shade trees, nearby waterways, prevailing breezes, views etc.

SITE ORIENTATION

The first step in orientation is maximising the northern aspect, where exposure to the sun is best controlled. Eaves and pergolas can be precisely designed to block the summer sun, yet still allow the desirable winter sunshine to penetrate.

North-side deciduous trees that shade the house during summer, allow the sun prime access once they have lost their leaves in winter. Reducing your exposure to the west will also minimise heat gain via the horizontal rays of the hot summer sun. Verandahs are not nearly as useful to the west and east of a house, as a vertical screen or thick planting is the only way to reduce heat load from these directions.

Some sites or existing homes aren't blessed with a pleasant, north facing aspect. Fortunately, your Archicentre Australia architect has the skills to design your home or renovation for maximum solar benefit.

ZONING

It is important to prioritise rooms based on access to views and solar penetration. An open plan kitchen and living area, for example, should have pole position, while bedrooms or bathrooms require less daylight, as they are largely used for short periods of time, or at night. By zoning your home, unused areas can be closed off, and cooling and heating appliances can be designed for maximum efficiency (e.g. minimum use).

MATERIALS AND CONSTRUCTION TECHNIQUES

The energy-wise home requires a complex mix of well insulated and/or high thermal mass building elements, intelligent glazing and ventilation controls, all arranged in a way that enhances comfort, anywhere in Australia.

INSULATION

Insulation is paramount to having an energy-wise home experience. Lining the roof, walls and floor can reduce heat loss in winter and heat-gain in summer. Consult an architect about the requirements for effective home insulation.

MATERIALS

Materials with a high thermal mass, like stone, brick or rammed earth, take a long time to heat up and similarly, a long time to cool down. A concrete slab, with its high thermal mass, can reap huge benefits from prolonged exposure to the winter sun, radiating warmth at night, when it's needed most. Walls with a high thermal mass should be shaded to minimize a heat load in summer.

GLASS

Glass is a very poor insulator. An energy-efficient design considers size, location, glazing type and window coverings. Other important factors include: locating windows away from the western sun, and in some areas, the eastern sun, placing tight fitting pelmets over curtains and blinds to trap air and create a layer of insulation to reduce heat loss on winter nights, reducing heat load and glare with specialized glass treatments

CROSS VENTILATION

Cross ventilation is an important design factor, and entails providing at least two carefully placed and treated openings in every room.

LOUVRES

Louvres are helpful as they can direct the air flow towards the occupant of the room. High level windows can allow unpleasant hot air to escape, resulting in the drawing in of cool air. Reversible ceiling fans are great in summer and winter. In winter, they push the warmed air down to where you are sitting.

DOOR & WINDOW SEALS

Doors and window seals are important to prevent cold air from whistling under your windows and doors and warm air from escaping. Energy-wise design is not an add-on feature. These principles come naturally for an architect, developed from years of training and expertise. Simple design techniques can help you achieve a home that is comfortable year-round, use minimal energy and provide a quality lifestyle no matter where you live - at no extra cost.

If you would like to talk to an Archicentre Australia architect – a building expert - about a particular matter, please call Archicentre Australia on 1300 13 45 13 or go to www.archicentreaustralia.com.au