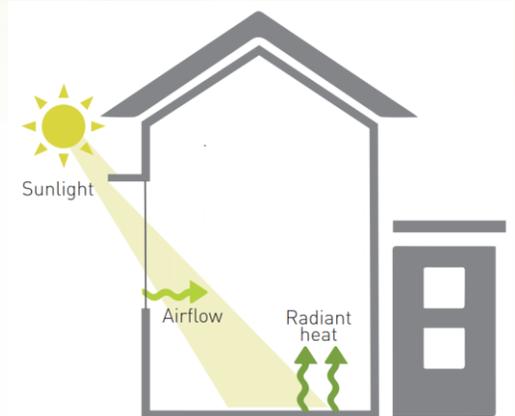


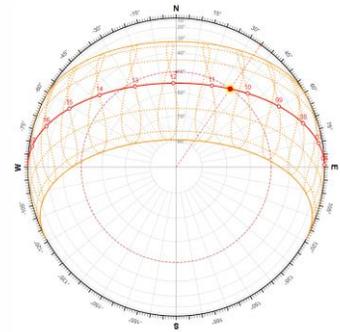
External Shading

External shading controls solar heat gain and excessive brightness (or glare), while maintaining views and daylight as much as possible. Shading can be vertical or horizontal, fixed or moveable, solid or louvred (perforated). Ideal shading design depends mainly on the location, orientation, window size and type.



Recommendations

- ❑ By mindful solar control design, we regulate how much light and heat enters the building. Solar control is achieved mainly by a balanced combination of:
 1. external shading,
 2. window size, and
 3. window type (performance glazing with low solar heat gain coefficient).
- ❑ For example: smaller windows need smaller shading devices and less expensive or clearer glazing.
- ❑ Exterior shading is much more effective at reducing heat gain than internal shading. Internal shading blocks the light and reduces glare, but it also traps the solar heat inside the building.
- ❑ Horizontal shading is recommended for the north façade (southern hemisphere). Overhangs (shown in the picture) balance shading for winter and summer requirements.
- ❑ East and west façades receive very high solar loads with sunrise and sunset.
 - First minimize glazing area
 - For large glazing, moveable vertical shading may be required.
- ❑ Deciduous plants and trees can be used to provide passive shading in the summer.
- ❑ Bespoke adaptable shading is a functional feature of modern sustainable buildings.
- ❑ Building performance modelling should be used to optimise the shading design.
- ❑ Contact [Ecolution](http://www.ecolution.co.za) for more details.



Sun-path chart for Cape Town (<http://andrewmarsh.com/>)

Savings and Benefits

- ❑ Shading benefits the building over its lifetime (50+ years) not just during the pay-back period.
- ❑ Energy modelling predicts savings from shading and balances shading requirements with window selection:
 - ❑ Reduction in the heating and cooling energy requirement.
 - ❑ Improved occupant (thermal) comfort.
- ❑ Shading is functional aesthetics of a modern climate-responsive building.

Environmental Improvement	High
Awareness Impact	High
Capital	Medium
Payback	Varies