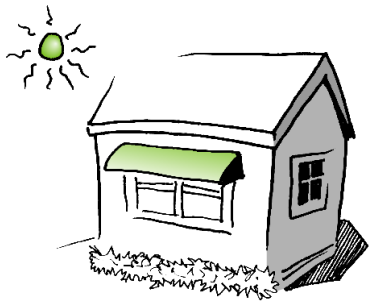
Advice:

- *Consider the location and cardinal direction*
  - Use a fixed sun shading on the south façade and removable/flexible devices on the east and west façade
- *The further out in the construction the better*
  - A sun shading device on the inside is not as efficient as one on the outside. To reduce the solar heat gain, shading is effectively installed externally
- *Acknowledge the solar altitude*
  - To optimize the effect of the sun shading, it needs to be regulated based on the height of the sun



About DREEAM

DREEAM (Demonstration of an integrated Renovation approach for Energy Efficiency At the Multi building scale) aims to show that renovating at a larger scale opens the opportunity for better integration of renewable energy and is generally more cost-effective. The project demonstrates a multi-building and single owner renovation approach that can achieve a 75% reduction of total energy demand.

The DREEAM approach is implemented on pilot sites in the UK, Germany and Italy. These demonstration sites are to validate the DREEAM method in different climate, cultural and institutional configurations.

dreeam
scaling energy renovation

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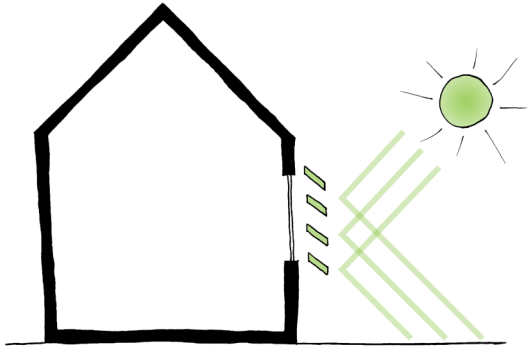
SUN SHADING



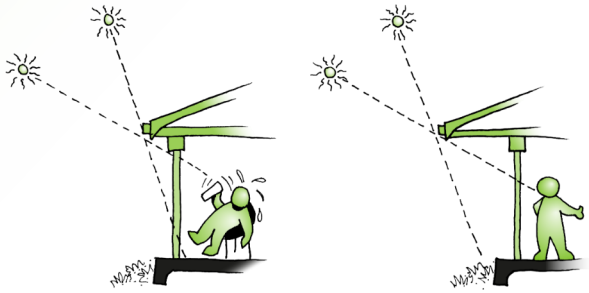
Benefits of sun shading devices

The implementation of sun shading devices can considerably benefit both residents and owners. Ideal solar shading can reduce solar heat gain by up to 80 to 90 per cent. Thus, reducing cooling energy consumption and significantly improve thermal comfort.

Additional benefits include improved visual comfort and, using solar control systems, reduced needs for artificial light as well as greater use of natural light. Newer, state of the art technologies, has made it possible to integrate solar energy technologies into the sun shading, generating electricity or heat.

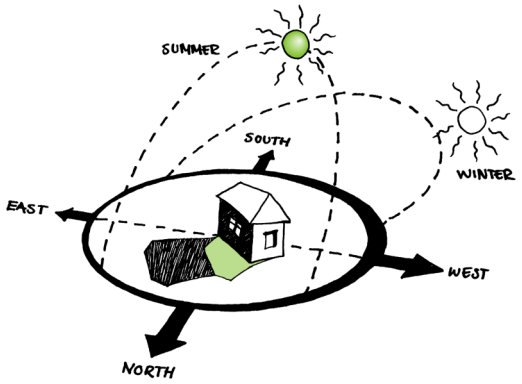
Solar heat gain (g-value)

Solar heat gain coefficient (g-value) is a measurement used to describe how much solar radiation the building fabric lets in. The g-value ranges from zero to one. If g is equal to 0,3, it implies that 30 per cent of the solar radiation enters through the building fabric. Thereby, a lower value is more desirable, especially in the summer.



Solar altitude

To choose the optimal solar shading device for a building, we need to know the elevation of the sun. The solar altitude is the angle of the sun relative to the horizon. Three parameters decide the angel; time, date and latitude. In Europe, in the northern hemisphere, the sun stands the highest in July and lowest in December. Whereas in the in the Sothern Hemisphere, it is the opposite.

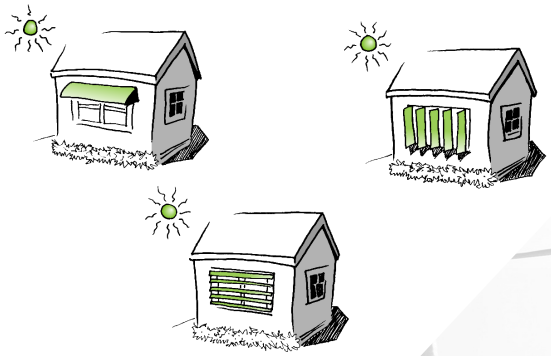


Different cardinal directions

Depending on the direction a façade is facing, the amount of sunlight experienced throughout the day will differ. Generally, the southern façades are most exposed to sunlight, making a fixed sun shading device suitable. The western and eastern façades experience less sunlight, making a removable device optimal. In most of Europe, northern façades are rarely exposed to the sun and often do not need any sun shading.

Different ways to shade

There are a variety of ways in which we can shade our buildings. These can be categorized based on their position relative to the window as; external, integrated or internal.



External sun shading

External sun shading devices are generally the most efficient shading method used to reduce energy consumption and improve thermal comfort. The external shades are great for the reduction of solar heat gain by preventing solar radiation from entering. Awnings, slats and overhangs are common examples of external sun shading devices.

The climate heavily influences the durability and performance of a solar shading device and should be considered when choosing the type of shade. Alternative include elements like a deciduous tree, in southwest or southeast of a building.

Integrated sun shading

The integrated solar shading is part of the window solution. They appear as Venetian or roller blinds between panes of glass, or as in the form of special glazing (see the window pamphlet). For improved efficiency, the window requires an insulating glass pane on the inside.

Internal sun shading

The internal solar shades include Venetian and roller blinds, curtain panels etc. that, unlike the integrated shading is fitted inside the building fabric. Since the solar radiation already has entered through the window, most of it remains on the inside leading to a higher solar heat gain. However, some internal sun shading devices contain sun radiation reflectors, which can reduce heat gain. Thus, the central purpose of internal solar shadings is to increase visual comfort.