

Resilient Building Toolkit Adaptation Measures Factsheet

Name and description of measure: Solar shading

The primary function of solar shading is to reduce the thermal heat gain in a building, as well as controlling the levels of direct light. This can be provided by a number ways:

- **Overhangs** (also known as brise soleil) are used to block out high summer sun but allow low-angled winter sun. They are usually installed on south facing facades.
- **Awnings** are a simple form of overhang that are cheap to install and can be retracted if required.
- **Light shelves** are similar to overhangs and awnings but are installed half way up a window, typically above head height. The top shelf reflects extra daylight into the building without glare and without compromising shading.
- **External blinds** are available in various types and can be used over a fixed overhang or awning for more control of shading. You can opt for manual or automated control of the blinds from inside the building.
- **Internal blinds** are available in various types, including reflective roller blinds, opaque blinds, light-coloured blinds and transparent blinds.

Cost of measure (high, medium or low):

Overhangs & light shelves: the cost of these measures is medium-high depending on the level of automation. £6000 is a conservative estimate on the installation of a fixed solar shading overhang on 25m by 10m single storey open-planned office.

External & internal blinds: the cost of these measures is low-medium depending on the level of control.

Pros and Cons:

Pros

Low Maintenance (for non-automated systems).
Easy to retrofit with low interference to occupancy.
Allows natural working environment.
Allow window to still operate.

Cons

High maintenance costs for automated systems, particularly for replacing moving part.
May be impractical where there are planning constraints or structural limitations, such as glass curtain walls exist.

Effectiveness of measures (high, medium or low):

Overhangs, awnings and light shelves are effective at blocking out high summer sun. The amount of shading depends on the degree of overhang compared to the height of the window; a ratio of 1:1 is usually ideal for south facing facades. Adjustable shading is usually preferred for most applications but it is more expensive.

External & internal blinds: Internal blinds are less effective than external shading at controlling heat gain:

- Reflective roller blinds when closed reflect solar gain very effective
- Opaque blinds reduce solar glare but daylight levels will be poor and artificial lighting is usually required.
- Light-coloured blinds allow some natural daylight in and absorb less heat than opaque blinds. They cut solar glare but don't provide much privacy at night
- Transparent blinds maximise daylight but don't completely stop solar glare.

Photos:

Over-sized eaves



Brise Soleil



Light Shelves



Canopies & Awnings



External Blinds



Internal Blinds



Product review site:

Carbon Trust: <http://www.carbontrust.com/media/19525/ctl065-how-to-implement-solar-shading.pdf>

Link to case study:

Low carbon buildings: <http://www.energysavingtrust.org.uk/Publications2/Housing-professionals/New-build/Low-carbon-futures-zero-carbon-case-studies>