



Energy Efficiency Solutions

Installation of sun shading devices

General information on the solution —

“Targets”:

- Hotel area: General
- End-use: Space cooling

Related criteria of the EU Eco-label:

No criterion directly related to this solution

About its implementation:

- Ease: Moderate (**).
- Best moment: during façade renovation.
- Relevant initial situation: the hotel has space cooling needs in summer.

Indicative cost:

- Varies.

Indicative return on investment time:

- May be <5 years.

Note that costs and return on investment may vary greatly depending on the local context and on the hotel's initial situation.



Description of the solution —

Principle

Installation of external movable sun-shading devices is highly recommended in hotels that are exposed to the summer sun. Well-designed sun shading devices will help keep the building cool and comfortable and limit the space-conditioning needs of the hotel.

- A sun shading device acts as a barrier to solar radiation.
- This “barrier” is most efficient when placed outside the window, because in this case some of the solar radiation is reflected back to the outside before reaching the window. When the protection is placed inside, only a small part of the incoming solar radiation is reflected back to the outside.

Note that some solar shading systems can be used to produce electricity! (In this case, they contain photovoltaic modules).



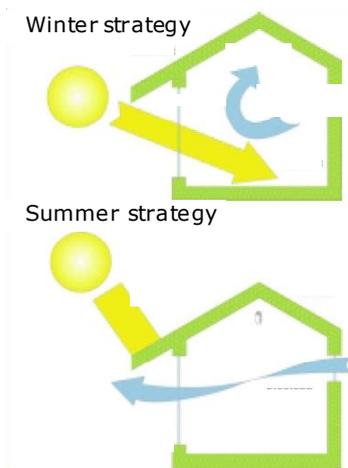


Recommendations

Outside sun shading devices (e.g. shutters) are recommended because they are **more efficient** than inside sun shading devices (curtains...) in terms of heat protection.

Sun shading devices can be **fixed** (e.g. sunshades) or **movable** (e.g. shutters). For rooms exposed to the East or the West, it is better to install movable sun shading devices, because they can be removed in winter to let the sun come in and heat the air. For rooms exposed to the South, either movable or fixed shading devices can be installed, because even with fixed shading devices sufficient winter sun will be allowed into the room (provided the shading device is well designed).

Room exposure	Type of sun shading devices recommended
North	No sun shading device
East & West	Movable, exterior sun shading device
South	Exterior sun shading device (either movable or fixed)



A fixed sun shading device on the southern façade can protect the hotel from the summer sun while letting the sun get inside in winter.

Which rooms should be protected as a priority?

- For guests' comfort, it is recommended that sun shading devices are installed on rooms exposed to the West, East and South.
- Office rooms exposed to the West and to the South should also be protected.

What are the criteria to consider when choosing a sun shading device?

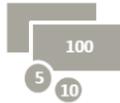
- Exposure of the room: the geometric angle between the sun and the window (i.e. exposure of the room) needs to be taken into account to choose an appropriate sun-shading device. To the South, the summer sun is high in the sky: it is best to have a horizontal sun shading device. To the East and West, the sun is lower: it is then generally best to have a vertical sun shading device.
- Type of window: the type of glazing and the size of the window should be considered.
- Compatibility with summer ventilation: if the hotel opens windows in summer to ventilate and cool down the hotel, you need to make sure the sun-shading device does not reduce ventilation capacity by too much.
- Colour of the sun shading device: it is best to choose shading devices with light colours, as these are better at reflecting back solar radiation.
- Durability: it is recommended to check maintenance requirements, wind resistance, etc.
- Ease of use: you may consider equipping movable sun shading devices with a centralised control system.



Link with others database

- Because the installation of **sun shading devices** (solution n°IX) involves renovation works on the exterior walls of the building, it should be considered together with **window insulation** (solution n°VI), **building insulation** (solution n°VII) and **prevention of air infiltration** (solution n°VIII).
- If summer comfort is a problem in your hotel, you should also consider undertaking some **outside work** or landscaping (solution n°X). If this is not enough, you may consider installing an **efficient solution for active space cooling** (solution n°XX).

Benefits for the hotel



Cost reduction

Energy saving

- Because sun shading devices help keep the building cool in summer, they reduce space-conditioning needs.
- In addition, some sun shading devices can limit heat loss in winter and thus decrease space-heating needs. (For instance, outside shutters that are kept closed at night limit heat loss.)



Staff involvement

Improved summer comfort

Sun shading devices improve summer comfort by helping to keep the building cool in summer and by reducing the use of active air conditioning systems (which may not provide the best comfort).

Benefits for the environment

CO₂

Carbon emissions
reduction

- For a 1,000 m² hotel with an annual electricity consumption of 37.5 kWh/m² for space cooling, and if the French emission factors are applied, a 20% energy saving on space cooling represents:

0.63 teq CO₂ avoided each year

French emission factor for electricity: 84.3 gCO₂ / kWh.

French emission factor for gas: 231 gCO₂ / kWh (Source: ADEME).

Market availability

Maturity of the solution: mature.

Manufacturers of solar shading systems

- Somfy www.somfy.com/group (shutters and awnings, automated blinds and curtains),
- Colt International www.coltgroup.com (fixed and movable solar shading systems),
- Tryba <http://en.tryba.com> (roller shutters, shutter blinds),
- Bubendorff www.bubendorff.com (automated blinds – France),
- Autogyre www.autogyre.net (vertical and horizontal solar shading systems – France),
- Roto Franck www.roto-frank.fr (interior and exterior shutters – France).

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