SOLUTIONS FOR BIOCLIMATIC FAÇADES

Boosting well-being in the **healthcare** sector

somfy®

All buildings dedicated to healthcare have the same primary aim: to take care of people's lives. This consideration plays a major role in the design, construction and use of these buildings, which must not only accommodate patients, but also act as an intelligent tool for those who devote their lives to taking care of others.

New requirements for healthcare buildings

Hospitals, clinics, care homes and retirement homes... all these facilities must meet a whole range of requirements.

> **Thermal and visual comfort**, to foster well-being and healthy conditions for patients, while providing the best possible working conditions for medical staff.

> Buildings with high **energy performance** reduce the need for air conditioning and heating, which means lower consumption in terms of energy and natural resources.

> **A rapid return on investment** as a result of energy savings and reduced maintenance costs.

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Somfy solutions for your projects

Somfy has developed intelligent solutions for the operation of building openings and sun protection devices. These systems improve comfort for occupants while also reducing energy costs.

In this way, **Somfy contributes to the development of bioclimatic façades** for all types of buildings, regardless of function or architecture.

Bioclimatic façades

- The façade is the building's envelope, and acts as the interface between interior and exterior, and between the natural and built environments.
- Outside, climate conditions vary according to the seasons, the weather and changes in daylight hours.
- Inside, conditions must remain as stable and as comfortable as possible for all occupants, based on their activities, needs and preferences.
- The bioclimatic façade is a living membrane that continuously adapts to changes in the weather, and to occupants' changing needs.

1 / **NATIONAL UNIVERSITY HOSPITAL SINGAPORE**
Client: NUH Singapore
Architect/interior designer: DP Architect
Date: 2010

2 / **HOSPITAL JEAN BERNARD VALENCIENNES, FRANCE**
Client: Hospital Valenciennes
Architect/interior designer: Groupe 6
Date: 2010

3 / **HOSPITAL SAMARITANO SAO PAULO, BRAZIL**
Client: Hospital Samaritano
Architect/interior designer: Botti Rubin
Date: 2009

4 / **BARTS HOSPITAL LONDON, UNITED KINGDOM**
Client: National Health trust
Architect/interior designer: HOK
Date: 2010

5 / **HONG KONG SANATORIUM & HOSPITAL DELUXE WARDS HONG KONG**
Client: National Hong Kong Sanatorium & Hospital
Architect/interior designer: Cristalla Designs & Contracting Ltd
Date: 2008


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Taking care of everyone's well-being

"Natural lighting reduces depression among patients and improves sleep and heart rhythm, which in turn reduces restlessness, relieves pain and improves working conditions for staff" *(Doctor Anjali Joseph, Center for Health Design, 2008)*

Adapt to meet individual needs

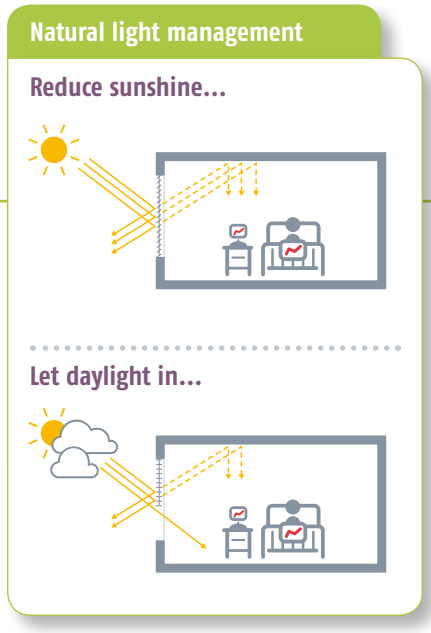
- Sun protection devices, managed by Somfy control systems, work to adapt the building to the activities of each of its occupants.
- Patients and healthcare personnel alike benefit from better conditions.

Improve thermal and visual comfort for patients

- The well-being of occupants, however long their stay in hospital, is an absolute priority, especially as increased thermal and visual comfort can have a positive influence on their health.
- Using Somfy control systems, patients can manage their own sun protection devices without moving from their bed, and without disturbing anyone else, in order to:
  - > filter natural light,
  - > protect their privacy,
  - > stay in control of their comfort at all times by overriding the automatic systems.

Help healthcare personnel to work in the best possible conditions

- To ensure optimum availability, each and every member of staff must be able to give the best of themselves in an environment conducive to care.
- By combining weather sensors, timers and centralized controls, Somfy solutions assist personnel by:
  - > provide visual comfort they need to work effectively (e.g. for examining an X-ray on a viewing screen),
  - > eliminate repetitive tasks, such as lowering awnings across a floor of a care home or retirement home when the sun is too bright.



Ensuring the building's performance

"Healthcare establishments use 3 to 5 times more "energy" than the average commercial building."
(Source IEA, 2008)

Save energy

- Today, thanks to Dynamic Insulation™*, we can save energy without compromising the comfort of patients and healthcare personnel.
- The sensors and automatic devices used in Somfy solutions reduce energy consumption:
  - > by prioritizing the use of natural light,
  - > by limiting energy leakage from indoors in winter,
  - > by reducing the amount of solar heat absorbed in summer.

Ensure profitable investments

- Ensuring profitability is a major requirement for healthcare establishments.
- Somfy's centralized automation solutions are easy to integrate and operate, and help ensure a rapid return on investment:
  - > decrease healthcare expenditures: patients who benefit from greater comfort take fewer painkillers (22% less according to Impact of Light) and are hospitalized for noticeably shorter periods,
  - > by reducing the number of manual interventions required, and therefore also the building's running costs.

Extend buildings' lifespans

- Managing expenses is a key concern. Equipment installed must therefore anticipate future changes in order to enhance the building's lifetime.
- The high-quality design and manufacture of Somfy solutions mean that buildings fitted with these solutions ensure years of efficient service:
  - > weather sensors automatically lift awnings in order to protect them from storms, reducing maintenance costs,
  - > the motors fitted ensure gentle movements that extend the life of blinds,
  - > centralization systems can be easily adapted to meet changes in regulations.

*Thanks to Dynamic Insulation™ by Somfy, sun protection devices react automatically to outdoor climate conditions in order to reduce energy consumption and enable occupants to gain maximum benefit from the sun's natural heat.

Energy savings with automated sun protection devices

According to simulation tool created by Lund University in Sweden, an investment of 1% to 2% of the total cost of the building results in energy savings of 20% to 40% (see table below).

Lund University	Electricity consumption (annual)	Cooling load Reduction (in Watt)	Total savings on consumption (annual)
PARIS (France)	Reduced by 39.6% (743 kWh compare to 1.231 kWh)	Reduced by 39.7% (1.390 W compare to 2.306 W)	at price of € 0,11 kWh: € 53,68
SAO PAULO (Brazil)	Reduced by 28.52% (1759 kWh compare to 2461 kWh)	Reduced by 38.53% (1822 W compare to 2964 W)	at price of R$ 0.3 kWh: R$ 210.6
BARCELONA (Spain)	Reduced by 40.3% (1.604 kWh compare to 2.689 kWh)	Reduced by 42.05% (1.534 W compare to 2.647 W)	at price of € 0,14 kWh: € 151,90
STOCKHOLM (Sweden)	Reduced by 44.98% (795 kWh compare to 1.445 kWh)	Reduced by 43,95% (1.227 W compare to 2.189 W)	at price of € 0,15/kWh: € 91

Simulation definition: A 25 m² patient room, with 7 m² window glass (double glazing Low-E except for Sao Paulo Double glazing, Façade wall U-Value: 0,33 W/m²K), representing 50% of the room façade section, south oriented. Sun protection device is an internal grey PVC. The comparison is made between sun protection device and no sun protection device, depending on light level considering 1 person occupying the room, equipped with 250 W artificial lighting (detailed analysis available on demand).

LEED CERTIFICATION

Somfy solutions can contribute up to 20% obtaining LEED certification (approximately 20 out of 110 points and 10 criteria). They are also conducive to achieving the higher classification levels (Silver, Gold or Platinum). Somfy's responsible, economical and environmentally friendly solutions are often sought for use in LEED buildings.

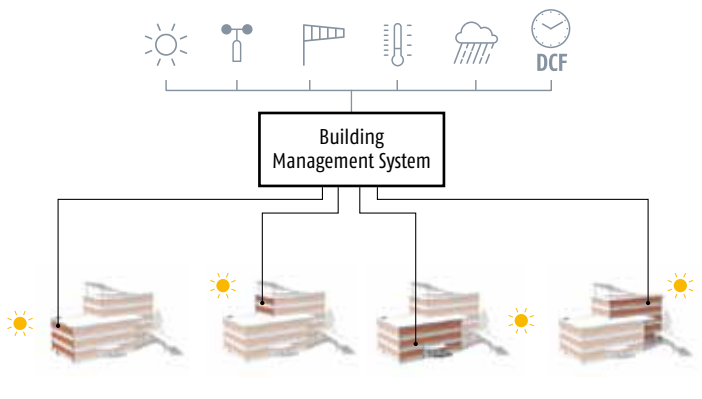
A solution adapted to each project

Flexible to install, easy to use and compatible with most protocols and control units on the market... All Somfy solutions are a perfect match for the needs and restrictions of the Healthcare sector.

You can anticipate requirements using timer programs, delegate to automatic sensors or let occupants make the decisions using wall-mounted control units or remote controls. Whether you want to equip a whole department, shared spaces (corridors, entrance halls, etc.), a laboratory or a façade,
your choice will depend on a number of criteria: the number of sun protection devices to be controlled (or the number of zones to be managed), the type of management or maintenance system,
the desired functions and the price.

Building management system

Sun-protection management systems with the animeo range (available in LON, KNX, Premium).
Sensor parameters, zone-based control, supervision, etc.

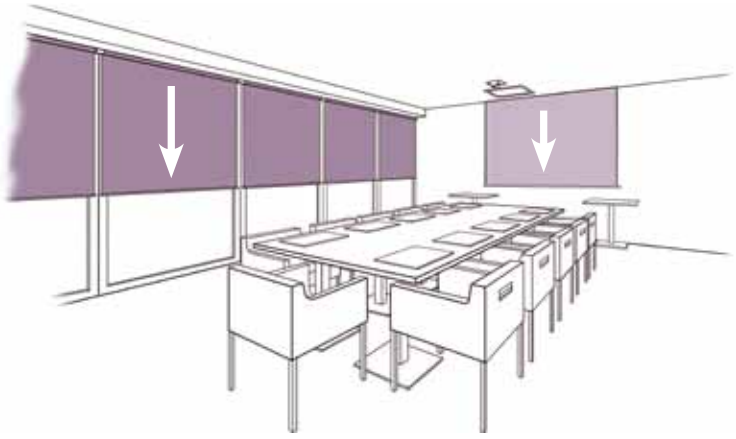


Shared lounge / Cafeteria / Meeting room

Outdoor sun protection:
Roller shutter
- Motor: Oximo
- Local control: Smoove

Indoor sun protection:
Black-out roller blind
- Motor: Sonesse
- Local control: Smoove

+ RS485 transmitter control (touch panel: to control lighting, projection screen, blinds, etc.)

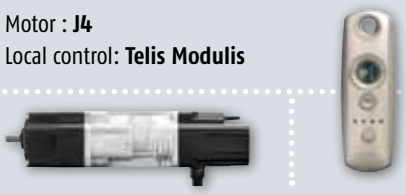


Outdoor sun protection: Roller shutter

- Motor : **Oximo**
- Local control: **Smoove**

Outdoor sun protection: External Venitian blind

- Motor : **J4**
- Local control: **Telis Modulis**



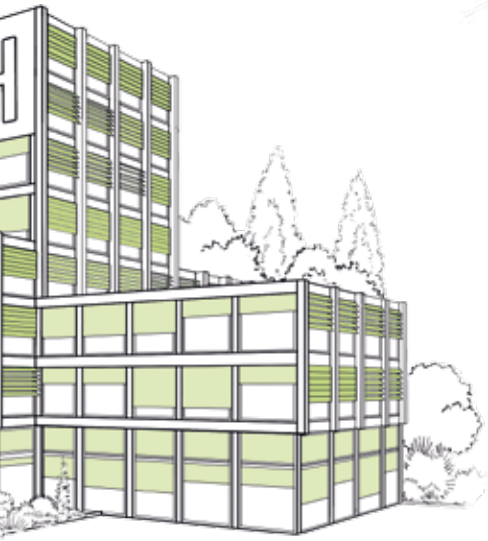
Outdoor sun protection: Screen

- Motor: **Altea**
- Local control: **Smoove**

Entrance hall / Corridor

Outdoor sun protection:
Screen
- Motor : Altea
- Local control: Smoove

Indoor sun protection
Roller blind
- Motor: Sonesse
- Local control: Smoove



Patient's room

Outdoor sun protection:
External Venitian blind
- Motor: J4
- Local control: Telis Modulis

Indoor sun protection:
Curtain
- Motor: Glydea
- Local control: Smoove O/C

+ Dedicated special remote control

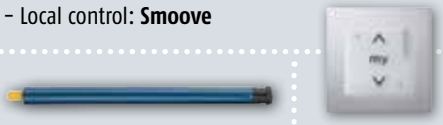
Offices

Outdoor sun protection:
External Venitian blind
- Motor: J4
- Local control: Telis Modulis

Indoor sun protection:
Black-out roller blind
- Motor: Sonesse
- Local control: Smoove

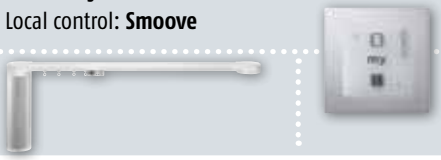
Indoor sun protection: Roller blind

- Motor: **Sonesse**
- Local control: **Smoove**



Indoor sun protection: Curtain

- Motor: **Glydea**
- Local control: **Smoove**



Somfy North American Headquarters
121 Herrod Boulevard
Dayton, NJ 08810
P (800) 22-SOMFY
P (609) 395-1300
F (609) 495-1776

www.somfyarchitecture.com
www.somfysystems.com
www.somfypro.com

SOLUTIONS FOR BIOCLIMATIC FAÇADES

Somfy operates in 54 countries,
with 68 subsidiaries,
51 offices and branches
spread across 5 continents.

With 7 production centers,
Somfy has effective,
responsive manufacturing facilities.

Thanks to its strict quality standards,
Somfy is able to satisfy the needs of
270 million users and
32,000 business clients worldwide.

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