



SOLUTIONS FOR BIOCLIMATIC FAÇADES



Education

Improve comfort
to encourage learning

somfy®



Buildings dedicated to education have a common goal: encourage access to knowledge. In order to accomplish this vital role for the future, buildings must provide the most comfortable working environment for students and teachers alike.

New requirements for buildings dedicated to education

All child care centres, schools, universities, laboratories, sports halls and residential school buildings must meet a whole range of requirements.

- > Increased **thermal and visual comfort**, benefits teachers and learners alike.
- > Especially **powerful ventilation control** in sports halls and rooms with very high occupancy coefficients.

> Optimised **energy performance** that meets new environmental regulations, and allows substantial savings.

> **Improved access management:** greater security for the whole building and its value.

1



2





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 / UNIVERSITY OF MELBOURNE MELBOURNE, AUSTRALIA

Client: University of Melbourne
Architect / Interior designer: Metier 3
Date: 2009

2 / ST PETERSBURG UNIVERSITY OF HUMANITIES AND SOCIAL SCIENCES SAINT PETERSBURG, RUSSIA

Client: St Petersburg University of Humanities and Social Sciences
Architect / Interior designer: Amigo Design, SPb
Date: 2010

3 / WARTBERG PRIMARY SCHOOL WARTBERG, AUSTRIA

Client: Wartberg municipal council
Architect / Interior designer: Wagner Projekt, Windischgarsten
Date: 2010

4 / BEIJING ENGINEERING SCHOOL GYMNASIUM BEIJING, CHINA

Client: Beijing Engineering School
Date: 2008

5 / JOHN E. JAQUA ACADEMIC CENTER FOR STUDENT ATHLETES EUGENE, OREGON, USA

Client: University of Oregon
Architect / Interior designer: ZGF Architects LLP
design by Randy Stegmeier
Date: 2010



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4



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Making everyone's working environment more comfortable

"In a study performed over the course of an academic year in San Juan Capistrano, California, students who benefited from more natural lighting in their classrooms achieved scores that were 20% higher in mathematics tests and 26% higher in reading tests than students whose classrooms had less natural light."
(David Hobstetter – "Daylighting and productivity: a study of the effects of the indoor environment on human function" – 2007)

Improve thermal comfort

- Classrooms that are too hot or too cold reduce student concentration levels and prevent effective teaching.
- With Somfy, sun protection devices are automatically activated:
 - > When it's hot, in order to protect the classroom from the sun's rays.
 - > When it's cold, in order to keep heat in the building when it is empty.
 - > These automatic devices can also be managed locally by occupants via a remote control.

Improve visual comfort

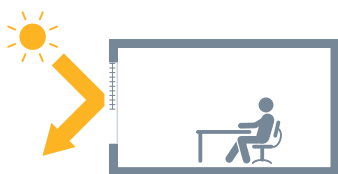
- Classrooms, lecture halls and laboratories all require their own type of lighting in order to optimise occupant comfort according to their activities.
- By combining weather sensors, timers and centralised controls, Somfy solutions can be used to:
 - > Limit the amount of sunlight entering rooms where monitors are used.
 - > Let in the right amount of natural light during lessons.
 - > Filter brightness levels according to the sun's position.

Improve ventilation

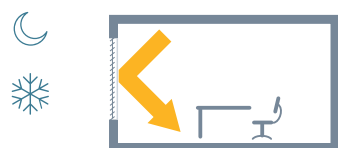
- Air quality, like temperature and light levels, is an essential component for comfort. It must be monitored in order to help occupants achieve the best possible results.
- With Somfy's automatic systems, adapting the ventilation of a conference hall according to the number of occupants or airing a sports hall couldn't be simpler.

Optimisation of the temperature

When it is hot...

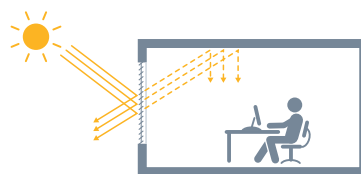


When it is cold...

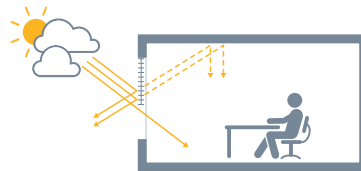


Natural light management

Reduce the amount of sunlight...

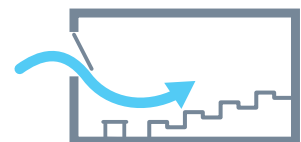


Let in natural light...



Air renewal

Ventilate...



for better air quality.





Improving building performance

“Gurtekin, Hartkopf and Loftness of Carnegie Mellon University reported average energy savings of 52% through the use of high-performance daylighting systems.” *(Carnegy Mellon University - 2004)*

Save energy

- Somfy offers Dynamic Insulation™ solutions*, so that you no longer have to choose between comfort and energy savings.
- The sensors and automatic devices used in Somfy solutions reduce energy consumption:
 - > by prioritising the use of natural light,
 - > by reducing solar gains in summer,
 - > by adapting building openings to occupancy periods (variable lesson times, school holidays, etc.).

Make the most of your investments

- The investments made in the construction of educational buildings are often significant. These facilities must therefore be designed and built in such a way as to extend their lifetime.
- Somfy's centralised automation solutions are easy to integrate and operate, and help decreasing running costs:
 - > by reducing energy consumption,
 - > by reducing the number of manual interventions required,
 - > by improving security, and so avoiding damage and vandalism.

Extend buildings' lifespans


- 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.
 - > Centralisation 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 light and 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 Watts)
NICE (France)	Reduced by 18.8% (11,789 kWh compare to 14,529 kWh)	Reduced by 28.3% (7,796 W compare to 10,872 W)
SAN DIEGO (USA)	Reduced by 18.58% (12,718 kWh compare to 15,620 kWh)	Reduced by 42.76% (7,890 W compare to 10,841 W)
ABU DHABI (UAE)	Reduced by 25.04% (15,136 kWh compare to 20,192 kWh)	Reduced by 33.46% (7,631 W compare to 11,468 W)
SHANGHAI (China)	Reduced by 17% (11,095 kWh compare to 13,368 kWh)	Reduced by 26.9% (7,244 W compare to 9,909 W)

GBCA CERTIFICATION

Somfy solutions can contribute up to 40% towards obtaining GBCE Certification (approximately 59 out of 142 points). They are also conducive to achieving the higher classifications of 5* and 6* Green Star (Australian Excellence and World Leader status, respectively). Somfy's responsible, economical and environmentally friendly solutions are often sought for use in GBCE buildings.

Simulation definition: A 86,4m² school room, with 18,52 m² window glass (double glazing Low-E except for Abu Dhabi and Shanghai Double glazing, Façade wall U-Value: 0,33 W/m²K), representing 60% 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 35 persons occupying the room, equipped with 864 W artificial lighting (detailed analysis available on demand).

A solution adapted to each project

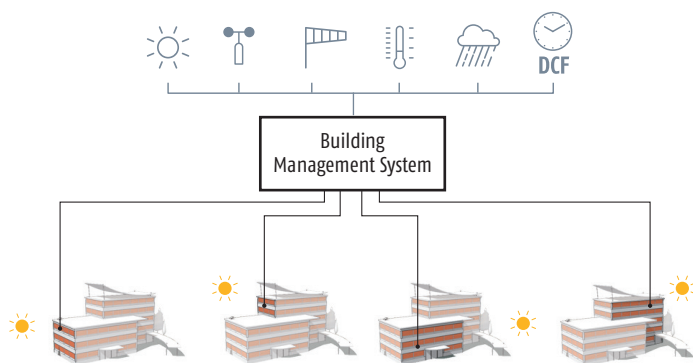


Flexible to install, easy to use and compatible with most protocols and control systems on the market, Somfy solutions are a perfect match for the needs and restrictions of the Education sector.

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 classroom, shared spaces (corridors, cafeteria, etc.), a sports hall, a laboratory or a facade, 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 level of investment.

Building management system

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



Classroom / Lecture hall

Outdoor sun protection:

External Venetian blind

- Motor: J4
- Local control: Telis Mod/Var

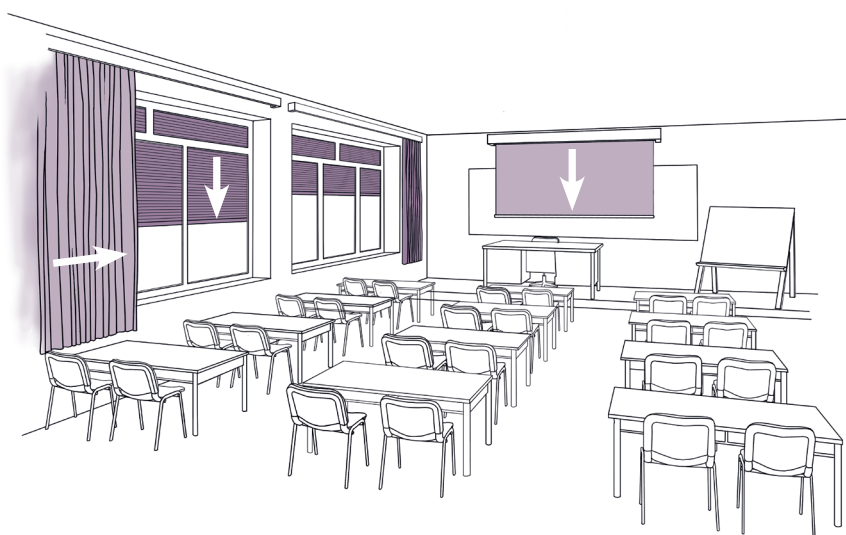
Indoor sun protection:

Curtain

- Motor: Glydea
- Local control: Smoove

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

+ Projection screen (Sonesse motor)



Outdoor sun protection:
Roller shutter

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



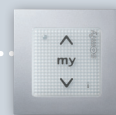
Outdoor sun protection:
External Venetian blind

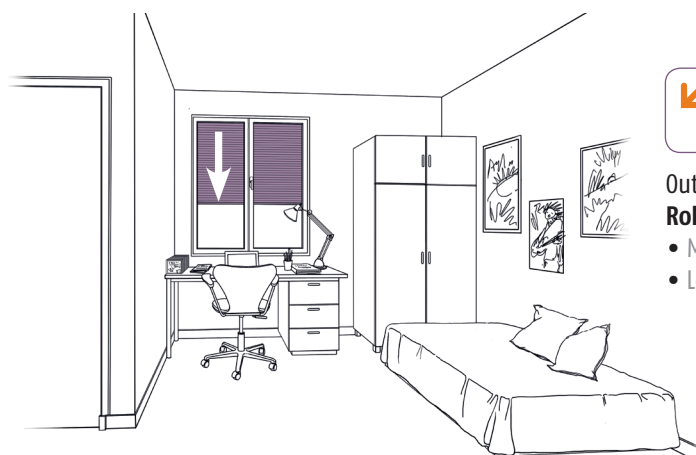
- Motor: **J4**
- Local control: **Telis Mod/Var**



Outdoor sun protection:
Screen

- Motor: **Altus**
- Local control: **Smoove**





↙ Bedroom in residential school building

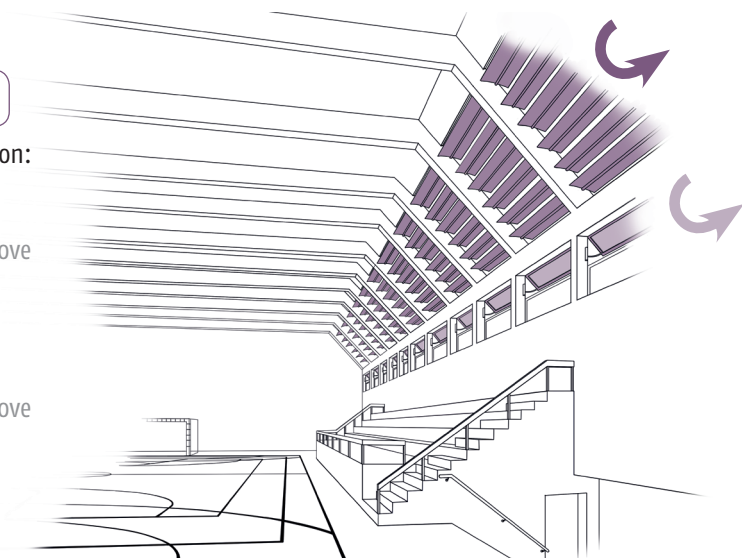
- Outdoor sun protection:
Roller shutter
- Motor: Oximo
 - Local control: Smoove



Sports hall ↘

- Outdoor sun protection:
Louvre
- Motor: Rodeo
 - Local control: Smoove

- Window:
Opening
- Motor: Linkeo
 - Local control: Smoove



↙ Laboratory / Technical classrooms

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

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



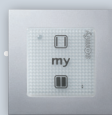
Indoor sun protection:
Roller blind

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



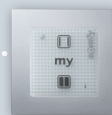
Indoor sun protection:
Curtain

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



Window:
Opening

- Motor: **Linkeo**
- Local control: **Smoove**



SOMFY Pty. Limited

Australia

Toll free 1800 0 SOMFY

t: (02) 8845 7200

f: (02) 8845 7282

e: somfy.au@somfy.com

New Zealand

Toll free 0800 2 SOMFY

e: somfy.nz@somfy.com

somfy.com.au

somfy.co.nz

somfy-architecture.com.au

SOLUTIONS FOR BIOCLIMATIC FAÇADES

Somfy operates in 60 countries,
with 76 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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