

## University of Melbourne – Faculty of Economics & Commerce 5 Star Green Star Building

The opening of the Faculty of Economics and Commerce building is a milestone for the University of Melbourne on its path to be a world leader in sustainable practice within the education sector. Designed to accommodate up to 400 staff and 1,800 students this state-of-the-art building has been awarded a 5 star Green Star – Education PILOT rating by the Green Building Council of Australia.

The University of Melbourne plans to be carbon neutral by 2030. To support this goal the design of the Faculty of Economics and Commerce building focused primarily on Indoor Environment Quality whilst reducing the CO<sub>2</sub> emissions, water and energy usage. After one year in operation the post occupancy study has demonstrated a 46% reduction in the use of electricity when compared with other typical tertiary education facilities. These savings equate to around \$260,000 per year.

Critical to the design of a green building is a well designed façade and the Faculty of Economics and Commerce building is no exception. Its façade marries high performance with its distinctive look. At the heart of this masterpiece is a fully automated solar shading system controlled by Somfy's **animeo** IB+ Premium Façade Management System. The **animeo** solution maximises the availability of natural daylight in the building whilst controlling glare and solar heat gains.

The Somfy **animeo** IB+ package is an independent, off-the-shelf, control solution that monitors the ambient light levels to ensure that the blinds are always in the correct position. Additionally it features a built in sun-tracking algorithm and timers that can easily be configured during commissioning to manage the reaction of the façade at different times

during the day and on different days of the week to reflect occupancy levels within the building. The **animeo** IB+ system can also receive inputs from the building's management and HVAC systems as well as giving users overriding control of the blinds in their local area. The building reset function of the **animeo** system gives architects a powerful tool to ensure a uniform look of the building, something that is highlighted with all blinds retracted on the translucent night-time façade.



### Project Details

#### Location

Melbourne, Australia

#### Type of Building

Educational  
25,000m<sup>2</sup>

#### Investor

University of Melbourne

#### Architect

Metier3

#### Builder

Probuild Construction

#### End-products

500 Lidi Internal Roller Blinds  
powered by Somfy

#### Somfy Solution

**animeo** IB+ Premium  
LS40 motors

#### Project Manager

The Lidi Group

[somfy.com.au](http://somfy.com.au)  
[somfy.co.nz](http://somfy.co.nz)  
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## Case study:

# University of Melbourne Faculty of Economics & Commerce

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## Case study: University of Melbourne

### Intellectual Activities; Natural Light, Glare Control and Energy Savings

In our modern environment, designing a building is becoming increasingly more complex. With the increasing monetary and societal costs of energy from non-renewable sources the requirement is clear for building designers, developers and builders to reduce its use. However, it shouldn't mask the fact that buildings are made to support human activities. The use of natural energies such as daylight, and elements such as fresh air, not only reduces the energy consumption of buildings it also has a positive impact on the occupants.

#### Natural Light – A natural contributor to increased productivity

A typical green building is 30 to 40% more efficient than buildings designed without green attributes. After the first year of operation the post occupancy study of the 25,000m<sup>2</sup> Faculty of Economics and Commerce building has already shown savings of around \$260,000 on the electricity costs.

Whilst this is a large figure it is overshadowed by the benefits for human beings. Some are complex to translate into pure financial gains. For example, studies have linked daylight and circadian rhythms as having a strong impact on mental and physical health. One can say that good health is priceless and the same is true for the learning of students. Classrooms with high levels of natural daylight improve student scores in maths tests, on average students progress 20% faster and in reading tests, students progressing 26% faster. Some other benefits are more straight forward to translate into financial gains. The Faculty of Economics and Commerce building's 400 staff also benefit from the natural light and a 5% gain in productivity from these staff would be, according to numerous studies, the minimum expected. Based on average salaries within the higher education sector this gain could be over \$2 million per year.

#### Daylight Management – Manual vs. Automated Control

We have seen that the provision of natural daylight in the design of a building is paramount. This provision must be well managed otherwise problems can occur. These can include excessive glare, lighting levels that are too high, contrast levels that are too high and high temperatures if heat load is not catered for.

The 1-3-10 contrast rule defines the relationship for glare; the difference in brightness between what the eye sees (30° angle) and a visual task (e.g. sheet of paper) must be no more than a ratio of 1 to 3. The ratio is 1 to 10 for the difference between total perceived light (90° angle) and surfaces located within the field of vision (e.g. a window).



With sun protection device Without sun protection device

Well designed operable internal and external solar protection solutions such as blinds and awnings give one of the simplest methods of managing daylight. They allow the building's users to tailor the amount of daylight to deliver the required thermal and optical comfort levels. However, the use of a manual blind relies on the occupants to position the blind where they believe it will give them the best comfort level for the longest period of time. Imagine the number of times someone has to get up from their desk to adjust a manual blind over the course of a day in order to mirror the control settings of an automated solution. By fully automating these solutions, building designers can ensure that the blinds and awnings are always in the correct position to deliver optimum performance.

### animeo IB+ Premium – The University of Melbourne Solar Control Strategy

animeo is an off-the-shelf façade control package with a high level of built-in features and flexibility. Designed to marry the challenges of occupant comfort and energy management animeo uses a zone based or individually addressable motor control

The Faculty of Economics & Commerce building is divided into eight zones, with an upper & lower zone on each of the four facades. The automated blinds in each zone are programmed to operate using the following control strategies.



**Sun Control** – when the solar level is above a set threshold the blinds will lower to prevent thermal gains.



**Local Control / Somfy RTS cards** – Using wireless Somfy RTS wall switches occupants of the building have local control over the blinds in their immediate area. The use of the Somfy RTS cards reduces the amount of wiring required and increases the flexibility of the system for future changes or upgrades.



**Software** – The animeo system is configured using a software package. This allows control over the finest detail but is easily reconfigured or refined by a trained user should the need arise. Additionally the system will log and report and faults or scheduled servicing requirements.

solution. A zone is usually made up of like products in a similar geographic area of the building whilst higher performing KNX or LON based solutions allow individual motors to be uniquely controlled.

**AMX Control** – Computer labs use an AMX control system to manage all aspects of the operations of these rooms. The AMX is an additional level of control in these areas and can operate the blinds regardless of which zone on the animeo system controls them.



**Zone Timers** – working in conjunction with the Sun Control the eight zones have been programmed to operate at different times of the day in line with their position within the building.

**Building Reset** – At a specified time each day the blinds in the building will all revert to a pre-determined position.

