

040 FAÇADES



Rob Hamilton from the Window Film Association of Australia and New Zealand.

## FROM 'THERMAL HOLE' TO EFFICIENT WINDOW

Windows play a key role in satisfying many of the expectations of commercial building tenants, ranging from energy-efficient performance to aesthetic appeal and flexibility of use. ROB HAMILTON, president of the Window Film Association of Australia and New Zealand, explains how window films are revitalising Australia's building stock.

**T**enants are demanding more from their commercial space. So selecting the right window treatment can be critical to a successful long-term facility management strategy. Here, we compare one window treatment option - window film - to other traditional solutions and explore its functionality in a commercial environment.

### ENERGY

The majority of a typical building's cooling load is a response to solar heat gain through windows, which is why they have been dubbed 'thermal holes' in the past. Untreated windows can be responsible for as much as 87 percent heat gain inside a room.

Solar control film can address this issue, reducing up to 79 percent of total solar energy entering the building through the windows.

This decreases the demand placed on the air-conditioning system. In many cases, the electricity savings alone mean that window film pays for itself within five years. Other benefits can then follow, such as reduced costs and less frequent HVAC maintenance/replacement schedules. In multi-chiller systems the reduced load can mean significant redundancy opportunities if the system can run more often on fewer chillers.

Engineers are able to model solar control window films in their building energy analysis software, using the manufacturer performance figures for U Value, Shading Coefficient, Solar Heat Gain Coefficient (SHGC), etc. From these models the engineer can calculate the real electricity savings.

A selection of films available in Australia have been rated within the Window Energy Rating Scheme (WERS), which enables windows to be rated and

labelled for their annual energy impact in any climate of Australia ([www.wers.net](http://www.wers.net)). WERS, as an independent scheme unaligned to any one manufacturer, acts as a fair, credible and rigorous system for testing the performance claims of window film.

### FLEXIBILITY

Businesses often demand a certain degree of internal flexibility in order to adapt space to suit their particular needs, which can change as the company develops.

Eliminating hot and cold spots and reducing glare improves the usability of each room, which allows for greater freedom in office configuration.

Film can be removed with minimal fuss. As fashions change, so can the look of the windows - the bronze look popular in the 1970s would not satisfy current design trends, for example! Similarly, if major renovations to a façade are scheduled in the long term, but an immediate solution is required, window film is a cost-effective option.

### AESTHETICS

A visually exciting façade creates the first impression of a building, which reflects on each of its tenants.



### CASE STUDY - WASHINGTON DC

The US Department of Energy, Washington DC, leads by example when it comes to energy efficiency. It chose to install 24,380 square metres of solar control safety film for two reasons - to reduce energy consumption and to protect its occupants from broken glass in the event of severe weather, accident or bomb blast.



Window film produces a uniform, neat and professional external finish that cannot be achieved with external shading devices or blinds.

Advances in the fabrication of window film have introduced a greater selection of design options. Different shades, tones, sizes, appearances (such as mirrored, non-reflective, nearly invisible, dark with high glare rejection, etc) are now available.

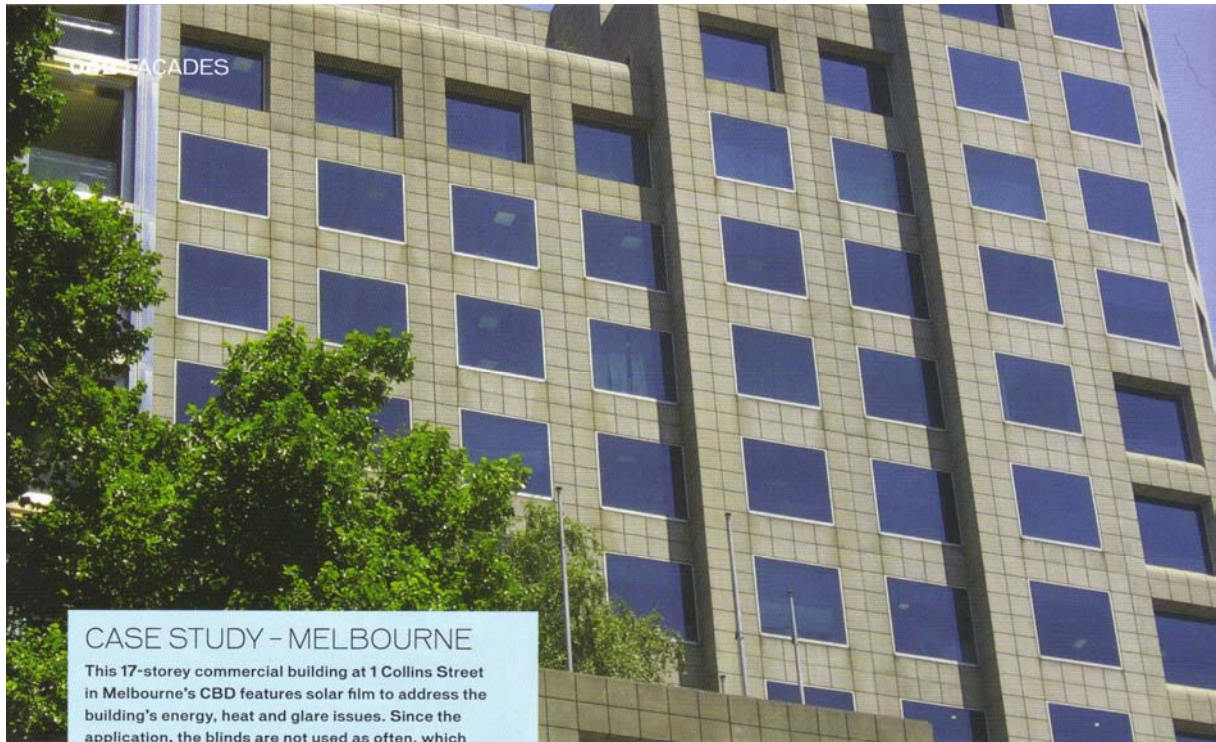
Also, facility managers of Heritage buildings have limited room to move when it comes to window renovation. Window film varieties are available that are basically invisible and cause no damage to the window frames, and yet they still reject up to 55 percent of the incoming heat.

#### **ANTI-GRAFFITI AND SAFETY**

Shopping centres, hotels, public buildings and the like have the extra consideration of vandalism and graffiti. Windows can be extremely expensive to replace every time a reprobate decides to spray paint or etch their name across a pane of glass.

Sacrificial window film has been made with the express purpose of

**above.** Safety film can help keep shattered windows in place, minimising the hazards of falling shards.



## CASE STUDY - MELBOURNE

This 17-storey commercial building at 1 Collins Street in Melbourne's CBD features solar film to address the building's energy, heat and glare issues. Since the application, the blinds are not used as often, which improves the external appearance of the building and allows tenants to enjoy the view in comfort. Offices around the perimeter of the building are now more usable due to reduced heat and glare.

mitigating such damage. Almost invisible once installed, the film is a removable, sacrificial surface that can reduce or eliminate the need for expensive glass replacement. A single replacement of just one window can easily exceed 10 or 20 times the cost of film installation.

Another variant of film is safety film, which has been installed in buildings around the world to provide protection from accidents caused by shattered windows. When safety film is applied to the interior surface of glass, it holds the shards together if the window is broken (see image page 41). It also helps bring old 'float' glass up to current Australian Standards for Grade A safety glass in human impact situations.

### FILM VERSUS GLAZING

Glazing products can offer similar benefits to film in terms of energy efficiency. Film is a fraction of the cost of a high-performance window unit and, importantly, installation causes minor disruption to the productivity of the tenant, as installation is done quickly and with minimal preparation.

Most films have 10-year plus warranties, while warranties for glass are rarely, if ever, at this level.

Consider the environmental footprint and economics of a window film installation versus glass replacement on an existing building:

- window film requires far fewer materials and less energy than glass to manufacture
- a piece of window film is small in comparison to a pane of glass, so there are lower volumes and weights to transport
- installing window film on existing glass means that the existing glass is not being sent to landfill, and
- window film can offer equivalent performance at a fraction of the cost.

### FILM VERSUS BLINDS

Existing and prospective tenants rank views very highly, and often pay a premium for real estate with high-quality vantages. 'A'-grade commercial buildings are veering away from blinds that obstruct the view and create an unsightly external aesthetic.

Film is a constant, passive solution. It's always there to control incoming heat, while blinds can be up or down depending on the occupant.

Window film rejects heat at the glass, so it does not penetrate the building. While some blinds have heat reflection properties, the necessary air gap between the blind and glass acts as a natural insulator so the net heat rejection is less.

Film has no mechanisms to fail over time, and as such comes with a warranty that cannot be matched by blinds.

### FILM VERSUS EXTERNAL SHADES

External shades for commercial buildings are effective, but often impractical as they mean significant modifications to the building façade to support the weight, which can also be costly. External shades can also alter the view substantially. **FM**

*The Window Film Association of Australia and New Zealand (WFAANZ) represents film manufacturers and installers, while providing facility managers with resources regarding the available types of window film. The website [www.wfaanz.org.au](http://www.wfaanz.org.au) lists installers in every state and contains contact details if more information is required.*

### More information

**WFAANZ** [www.wfaanz.org.au](http://www.wfaanz.org.au)