



BCA 2010 – WHAT IT MEANS FOR GLASS

Changes to the energy efficiency provisions of the Building Code of Australia (BCA) 2010 represent the first significant shift in stringency since the BCA 2006. The 2010 revision was introduced in May 2010, and is to be fully implemented in all states and territories by May 2011. These changes result from the Council of Australian Governments' (COAG) decision to introduce 6-star energy rating standards for housing, as well as more stringent performance requirements for commercial buildings.

Ivan Donaldson, Australian Building Codes Board General Manager, and Wade Bosse, Viridian Commercial Channel Manager (Australia & New Zealand), discuss the new BCA and, in particular, how architects and building designers can use glass to achieve compliance with the new code.

Photography – Peter Hyatt

'The BCA 2010's more stringent performance requirements have resulted in significant changes when it comes to glazing,' explains Mr Donaldson of the ABCB. 'Translating these requirements into the BCA's Deemed-to-Satisfy (DTS) provisions has brought about changes to both glazing assessment methods and their targets. In Volume One, which applies to Class 2-9 buildings, a star rating approach has replaced several former DTS measures for apartments and the like. The glazing assessment method previously dedicated to these situations has been removed from the BCA and glazing is now evaluated as part of house energy rating. The surviving DTS glazing method in Volume One can be used for the common areas of residential buildings and for the other classes of buildings covered by Volume One.'

The changes, in particular the more stringent requirements relating to glazing, have

caused some concern over whether we will see a reduction in the volume of glazing used in commercial buildings. However, as long as the appropriate glazing systems are specified there is no reason for this to occur.

'Behind the apparent complexity of the DTS glazing calculations there is a simple proposition: glazing area and glazing thermal performance are interchangeable. The calculations ensure that better thermal performance provides for larger areas of glazing. The relationship is mathematically exact and offers designers flexibility in configuring glazing to resolve potentially competing demands for daylighting, views and energy efficiency.

'The formula driven DTS glazing methods in the BCA were developed at the request of industry and with the active assistance of industry representatives. The goal was to allow users access to the benefits of

the whole spectrum of glazing types and qualities available on the Australian market,' says Mr Donaldson.

Since 2005, the ABCB has offered downloadable glazing calculators embodying the DTS glazing requirements. These calculators minimise the inconvenience of applying the formulas behind the DTS provisions, while mobilising the flexibility built into them.

'More and more data on glazing systems performance, in the required format of the Australian Fenestration Rating Council (AFRC), is available to designers and building owners. The online databases for both commercial and residential glazing systems provided by the Windows Energy Rating Scheme (WERS), for example, make it easier to select glazing systems with the required levels of performance for any preferred layout.



'Although stringency has increased in the BCA 2010, the required performance levels vary over three different glazing "applications"; aged care buildings, display glazing in shops/showrooms, and all other situations. Users will find that display glazing in a shop or showroom retains the single stringency level applied in the BCA 2009,' says Mr Donaldson.

While the higher targets call for better glazing outcomes, there are numerous combinations of glazing quality, glazing placement and shading which contribute to the calculated results. Within this diversity of solutions it is expected that the overall standard of glazing installations will improve,' says Mr Donaldson.

Viridian's Wade Bosse agrees. According to Mr Bosse, the range of modern glass technologies available to building designers means commercial buildings can feature extensive glazing and greatly reduce energy use at the same time.

'The increased stringency of the BCA 2010 should not automatically be equated with reduced use of glass and windows. By using the latest performance glass products it is

not necessary to reduce glazed areas or to use excessive shading in order to comply with BCA's energy efficiency provisions. Designers who are aware of, and are familiar with, the possibilities of high performance glass, have greater design flexibility than those who continue to rely on traditional glass types.

'However, Viridian has noticed an increased volume of calls from clients who are struggling with the new code and are not sure where to turn. Many designers are having to revisit their current glazing methods in order to comply with the new requirements, as old ways of achieving compliance may not work with the more stringent regulations of the BCA 2010. This could potentially lead to more architects and building designers turning to external consultants in order to ensure their projects' compliance, rather than undertaking this process in-house. While engaging external consultants may incur an additional fee, it will remove what can be a significant challenge for the designer, as well as increase the designer's productivity and often bring about a better outcome,' says Mr Bosse.



Ivan Donaldson – Australian Building Codes Board, General Manager



Wade Bosse- Viridian Commercial Channel Manager (Australia and New Zealand)

Designers and cost planners should also keep in mind that, in many cases, the extra cost incurred by specifying performance glass can be offset. Decreased heating and cooling loads made possible by improved thermal performance means there is the potential to downsize mechanical plant requirements.

'Many projects around Australia have demonstrated that using performance glass has actually reduced project construction costs after the savings associated with downscaling the HVAC system have been added in. Considering these upfront savings and the ongoing payback from heating and cooling related energy savings, the performance glass is actually paying for itself. It really is a win for the builder, their client and also the environment,' says Mr Bosse.

Following a major upgrade to Viridian's glass making plant in Dandenong, Victoria, last year, the CSR owned glass manufacturer now has one of the most advanced and sustainable glass making plants in the world. A wide range of high performance coated glass products allows commercial building designers to easily access energy efficient glass solutions from an Australian

manufacturer. The online pyrolytic Low E (Low Emissivity) coating line installed at Dandenong in 2009 as part of the upgrade represents a huge investment in the Australian glass market and will produce significant volumes of higher performing glass to supply the Australian market with glazing products capable of achieving compliance with the BCA.

'Given the significant gains in energy efficiency, it's fantastic to see projects that were single glazed are now being double glazed and others that would have previously used ordinary clear glass are now using a Low E glass instead. However designers should be aware that this is really only the tip of the iceberg when it comes to the range of performance glass products available,' says Mr Bosse.

'For instance, triple silvering coating technology used on certain double glazed units reduces heat gain by 74% through the glass and achieves U-values that exceed standard triple glazing. This is remarkable considering the product remains almost completely clear. These kinds of thermal performance improvements ensure that building users can continue to benefit from natural light and connectivity to the



outside world, both of which are becoming increasingly recognised for their effect on psychological wellbeing, without sacrificing energy efficiency. Triple silvering coating technology, as well as many other performance coatings, is now available locally,' says Mr Bosse.

However, while specifying the appropriate glass is essential, architects and building designers should be aware that BCA compliance depends on the thermal performance of the overall window system.

'Certainly, the increased stringency of the BCA 2010 energy efficiency provisions has encouraged innovation in the Australian glazing and window industries, leading to the introduction of new energy efficient framing technologies. Already manufacturers are rising to the challenge and developing frames that offer improved thermal performance over standard frames. Thermally broken frames, currently available from several window manufacturers including Capral and AWS, are ideal for

improved thermal performance as they minimise heat transfer between the interior and exterior,' explains Mr Bosse.

'Glazing is a vital part of the building envelope and ideally should be considered early in the design process. Getting the glass components right in the design stages helps make the project run smoothly and ensure you are able to take advantage of the most effective solution.'

Viridian Architectural Segment Managers in each state are on hand to provide expert project specific advice where needed. All Segment Managers are trained in Section J of the BCA, which covers building energy efficiency requirements, and have an extensive understanding of the entire glass range. By assisting with advice on performance requirements, and quickly and accurately identifying the appropriate glass for a project, Segment Managers can save architects a lot of time and effort.