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BPN

BUILDING PRODUCTS NEWS

BPN SUSTAINABILITY AWARDS

All the 2012 Finalists

ENVIRON:
OUT OF THIS WORLD TECHNOLOGY

FIRE PROTECTION::
PROJECTS + PRODUCTS

OUTDOOR LIVING & LANDSCAPE DESIGN:
BRINGING THE OUTDOORS IN

Editorial

Green not only survives but thrives in tough times

That old phrase 'the best things in life are free' springs to mind, having just put together this BPN Sustainability Awards finalists' edition – our sixth.

In what has been a tough period for the industry, it might seem counterintuitive that we'd gauge an increase in the Australian building industry's efforts to achieve ever greater sustainable benchmarks. But judging by the finalist projects in our 2012 Awards program, that's exactly what has eventuated.

A thread running through many entries was the need to carefully manage costs.

Thankfully, the elements most essential to sustainable design - the sun, rain and fresh air - are all available for free; you just need to know how to best capture and manage them.

The key concept of reduced ecological footprint also happily translates directly into 'economy of scale' or better use of resources; another goal which often means less dollars spent.

More projects than ever are ensuring a construction process where onsite waste is reused and recycled, again, more often than not, in the interests of cost management.

Our green building designers are also trending toward the whole of lifecycle approach, which means specifying longer lasting materials and products with better maintenance features and overall financial paybacks.

The finalists in the following pages undoubtedly include Australia's leaders in the progress outlined above.

The achievements span from the level of individual product and small projects through to the country's most significant commercial and public buildings. Some of the initiatives are genuinely world-leading.

Darling Quarter by fjmt.
More on page 20.

Not only do they showcase new technologies, product innovation and their application, but creative sustainable design solutions to core challenges like good solar orientation on difficult sites.

Interestingly, we can see that, year on year, buildings are getting smarter. From homes to huge office developments, building management and control systems are in place helping optimise sustainable performance.

And the work on these projects has spawned sustainable building guides and data which will be used to make the next buildings even smarter and greener, making the prospects for next year even better.

David Wheeldon
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On The Cover

1 Bligh Street, Sydney by Architectus + Ingenhoven Architects.
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Showcasing exemplary design and product application

9 Dot House's design is reminiscent of a tree-house

In the latest instalment of Projects + Products, **Danielle Bowling** gives an overview of two impressive buildings – one residential and one commercial – both of which are examples of the thoughtful application of fire protection products.

9 DOT HOUSE, NSW
RANA ABBOUD, ARCHITECT

9 Dot House is a conceptual holiday house nestled within a grove of eucalyptus trees in regional NSW that draws inspiration from its natural setting. Designed using off-the-shelf Cemintel products for the 9 Dots Award, nine tree-like columns underpin the house design conceptually and structurally. A retreat from the bustle of the city, there is a playful suggestion of the tree-house in the walkways to the upstairs bedrooms, and grandeur of the double height spaces above the living and dining areas. A kitchen and study are nestled beneath the bedrooms at the eastern and western ends of the house respectively, with a laundry and bathrooms at the internal corners.

Cemintel Designer Series products provide a rich palette of textures and colours that complement the hues of eucalypt leaves and bark outside. Woodgrain 'Maple' panels externally blend the house into its surroundings, while providing an extremely durable, non-combustible, and low-maintenance exterior cladding befitting a holiday house.

The external Woodgrain Maple wall cladding provides a light-weight, pre-finished non-combustible exterior cladding product. 9 Dot House also utilises CeminSeal BareStone panels as an operable external shading, privacy, and security device that provide additional fire protection to the glazed northern wall.

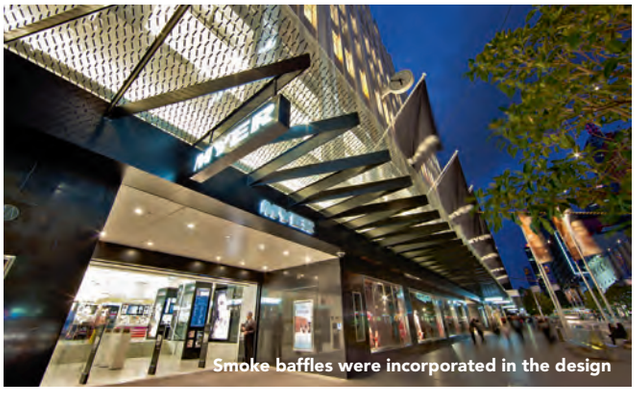
Each of the eight glazed bays on the northern facade can be protected by a mixture of nine solid and CNC stencil-cut panels measuring 1.8m x 0.6m. These operable panels are stored within the northern eave of the house and are retrieved by an automatic stacker that moves them from their stored position into vertical guides integrated within the external face of each mullion. The level of protection can be controlled independently for each glazed bay through manual or remote activation, or automatically by early warning sensor in the event of fire.

Cemintel I-Cube Onyx panels are used as shutters upstairs

The dimensions of the house are designed to utilise full length fibre cement panels with minimal cutting required. Where panels have been cut to create the operable shading partitions on the northern facade, the remaining panel ends have been used to clad the internal laundry and bathrooms.

Additionally, durable pre-finished Cemintel I-Cube 'Onyx' panels are reconfigured as shutters to the upstairs bedrooms of the holiday home, and provide feature panelling to the kitchen bench downstairs.

An inclined atrium links all floors at Myer Bourke Street



Smoke baffles were incorporated in the design

MYER BOURKE STREET

JEREMY DONOHOE, SENIOR FIRE PROTECTION SERVICES ENGINEER, NORMAN DISNEY & YOUNG

In early 2007 Myer kicked off a staged refurbishment of the Melbourne Bourke Street outlet, requiring new building services throughout.

NDY was appointed to undertake the design, documentation and construction phase administration of the Building Services for the project for the following disciplines: Mechanical, Electrical, Communications, Fire protection, Lifts, Acoustic, Fire Engineering, Security, and Lighting.

One of the key design features of the development was an inclined atrium, open on all sides, which linked all floors from ground to level six. This presented numerous challenges to the fire protection and fire engineering team, specifically:

1) Detection of smoke from a fire at the base of the atrium
2) Fire suppression of a fire at the base of the atrium
3) Minimising the spread of smoke from a fire from one floor to the next

A traditional approach to smoke detection would not work in this scenario, so a performance based design solution was engineered, consisting of various different forms of fire detection within the atrium, all working simultaneously to provide early warning of fire. Flame type detectors were installed at the base of the atrium, while a series of aspirated smoke detectors and beam type smoke detectors were installed within the atrium at various levels. Myer also wanted to use the atrium void for display purposes, such as large hanging displays and so beam detectors were strategically placed within the atrium void, concealed within the escalators.

Triple waveband infrared flame detectors were installed due to their superior false alarm immunity. The optical sensors and filters within the flame detectors have been carefully selected to ensure the greatest degree of spectral matching to the radiant energy emissions of a fire. The Xtralis VESDA product was selected for the aspirated smoke detection system, which utilised a high-efficiency aspirator to draw air through a distributed pipe network and then through a laser light source, able to detect smoke from a fire at the earliest stage using the light scatter principal of smoke detection.

Due to the size of the atrium and expected fuel load at the base, a traditional automatic fire sprinkler system was not deemed adequate. Consequently a deluge type automatic fire sprinkler system was designed. Upon sensing a fire at the base of the atrium, a fast acting deluge valve is programmed to automatically release water into a network of fire sprinkler pipework, with open nozzles around the atrium base and effectively deluging the fire with water. Simultaneous activation of two detection systems was employed to minimise the risk of deluge system activation from a false alarm.

Thirdly, to reduce the spread of smoke to multiple floors through the atrium, a series of both glazed and plasterboard smoke baffles have been integrated into the architectural design. In addition, a smoke exhaust system, also linked to the fire detection and alarm system has been incorporated into the top of the atrium, capable of exhausting 140,000 litres/sec. The fire engineering team utilised computation fluid dynamics (CFD) software Fire Dynamics Simulator (FDS) to model the movement of smoke within the building, determine suitable size smoke exhaust fans and rationalise the smoke baffle design.