

# A new face lift and re- engineered



Adelaide, the state capital of South Australia, has a track record of creating and sustaining some remarkable trends, despite its relative size.

The world-renowned Adelaide Festival of Art, now an annual event, always attracts headline acts, rave reviews and sell-out crowds. The nearby Barossa, McLaren Vale, Clare Valley and Coonawarra wine regions continue to win global accolades from vigneron, gourmet and consumer alike.

The built environment of the city itself is synonymous with excellent quality of life benchmarks that always rate highly in surveys for the "world's most livable city".

The Adelaide Convention Centre is Australia's first purpose-built convention centre. It opened its doors for business in 1987.

After nearly three decades of successful operation – including a number of extensions and refurbishment programmes – city authorities recently decided that a fresh approach to building extension work was necessary. It is noteworthy that the Convention Centre always remained profitable, despite the changes.

Their objective? To ensure that South Australia sustains and expands the economic benefit of the state's annual slice of the current AUD17 billion conference and exhibition industry in Australia.

It's worth noting that the total value of Australia's very competitive business events sector was reckoned to be AUD24 billion in 2012, a bottomline that is forecast by most industry observers to rise to AUD31 billion by 2020.

### WHAT

Fire protection for structural steel columns in parking area, primary and transfer beams in two levels of the building

### WHERE

Adelaide Convention Centre, South Australia

### WHEN

Completed in September 2016

### BUILDER

Government of South Australia

### BUILDING CERTIFIERS

Katnich Dodd

### MAIN CONTRACTOR

Lendlease

### ARCHITECT

Woods Bagot

### INSTALLER

LPH Painting Co Pty Ltd

### FIRE & STRUCTURAL ENGINEER

Aurecon

### PRODUCT & USAGE

Cafco SPRAYFILM® WB3  
25kg x 1,000 pails (25 tons)

### FRL PERFORMANCE

From 60/-/- to 120/-/-

## New extension timeline scheduled over two stages

Stage one included a 4,300m<sup>2</sup> multi-purpose exhibition and conference space, meeting spaces and a 600 seat -1,000 stand-up space ballroom that was built by extending the site over existing railway tracks.

With the first stage complete, the original building was demolished to make way for the second stage construction which commenced in early 2015.

Stage two includes a 3,500 seat plenary building or 3,000m<sup>2</sup> of flat area for exhibitions. This is achieved in the same area by the innovative use of seating that can be raised, lowered and reconfigured depending on the characteristics of particular events.

The building super structure is built from steel with extra steelwork added to the existing carpark levels below the building to provide additional seismic performance.

The Building Code of Australia's (BCA) deemed to satisfy requirements stipulated all steelwork to have a fire resistance up to 120 minutes.



View into future plenary area



Main support steel of the convention floor



Supports for theater seating area

## Structural fire engineering report points the way ahead

As fire protection of all structural steel in the project to be deemed to satisfy requirements was not considered to be cost effective, Aurecon was commissioned to complete a structural fire engineering report to assess individual rating requirements.

Aurecon examined the use, geometry and fire risk of the building as well as other active fire protection measures used through the structure, such as sprinklers. Aurecon also modelled a number of fire scenarios through the use of Computational Fluid Dynamics (CFD). The modeling system used Fire Dynamics Simulator 5 software.

From such CFD computations, likely temperatures that steel in the building would reach in different fire scenarios were determined. Similarly, assessment of the limiting steel temperature required – and how the structure would spread and transfer its load in the event of failure of beams or columns in certain location – was also calculated.

The data determined what FRL various structural steel members would require.

The report provide clear indications that columns in the carpark areas, along with the primary and transfer beams on levels 4 and 5, required an FRL of either 60/-/ or 120/-/, depending on their location. Most secondary beams and some of the primary beams in the upper levels were left unprotected.

Through the tenacity of Promat Australia’s technical knowledge and the company’s recognised applicator, the team clearly demonstrated that Cafco SPRAYFILM® WB3 spray meets all essential requirements of the fire engineers.

## Appropriate fire protection with spray coating application

The green credentials of Cafco SPRAYFILM® WB3 and its low VOC content also weighed significantly on the eventual “product approved for use” decision making process.

Installation at the Adelaide Convention Centre of approximately 25 tons of the Cafco SPRAYFILM® WB3 spray coating system was achieved over an eight month timeline.

Both installer and builder devised an effective quality control system, and the Promat technical team made a number of site visits to ensure the appropriate thickness of the applied product on all structural steelwork.

The reconfigured structure of the Adelaide Convention Centre is slated to re-open to international acclaim in mid 2017. ✎