

## CONFERENCES

### IFAI EXPO

26th—28th October 2000  
Orlando, Florida USA  
Industrial Fabrics Association International Conference features the latest products, trends and ideas in the industry.  
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### AUSTALIA STRUCTURAL ENGINEERING CONFERENCE ASEC, 2001

29th April—2nd May 2001  
Goldcoast, Queensland Australia  
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Web: www.icms.com.au

### 6TH WORLD CONFERENCE TALL BUILDING AND URBAN HABITAT

26th February—2nd March 2001  
Melbourne Convention Centre Australia

### LSAA AGM/SEMINAR

September 2001  
Sydney, Australia  
LSAA 20th Anniversary Dinner

### LSAA CONFERENCE

October 2002  
Melbourne, Australia

## LSAA WEBSITE

The LSAA website is currently under construction. The website is to include a number of features with the main purpose providing members with an up to date reference on Lightweight Structures.

For more information on the web page, including the launch date, get surfing to www.lsaa.org

## LSAA Committee 2000 Contact List

The next Annual General Meeting will be held via telephone hook up between Melbourne, Sydney and Brisbane at 4pm on 16th November.

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This newsletter is produced by the Lightweight Structures Association of Australasia.

**LSAA**  
LIGHTWEIGHT STRUCTURES ASSOCIATION OF AUSTRALASIA

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## UNIQUE GLASS CANOPY NEARLY COMPLETE

### Editor's Notes

We are pleased to join the coloured world with this issue of the LSAA newsletter "Lightweight Talk".

The newsletter is going to be produced quarterly with not only articles on specific projects, but information on innovative new products, conferences and other great stuff.

If you have any project or product you would like to show-case in the newsletter, we would love to hear from you. For inclusion in the next issue please submit details by the 7th November, 2000

R MacDonald LSAA Editor

## OLYMPIC FEATURE

In our next issue of "Lightweight Talk" we will be previewing the use of lightweight temporary structures to complete the overlay at all of the Olympic venues. Most of these structures have been built for the short duration of the Olympics, and in the majority of cases, designed for a second purpose.

Over \$400m was spent on Olympic overlays, with a lot of the structures constructed from lightweight materials.

If you have been involved in any of these projects, we would love to hear from you. Please contact the editor.

Construction is nearly complete on the cable net and suspended glass canopy at Aurora Place, Sydney. The concept for the glazing canopy was envisaged by Renzo Piano, one of the worlds leading architects, in association with Ove Arup and Partners, structural engineers for the project. The canopy has a plan area of approximately 650sqm and is suspended between two office towers giving a maximum span of 30 metres. Support for the frameless glass is provided by a cable net, formed into an anticlastic surface to ensure structural resistance to both downwards and upwards loading.

The glass surface is suspended from the cable net via droppers located at each of the approximately 300 intersection points of the cable net. Another unique feature is that the glass is also warped into a shape that will provide positive falls to a

single drainage point at the northern edge of the canopy.

The cable net, consists of 18mm diameter, high tensile, stainless steel rods connected at each intersection via stainless steel cast nodes.

The glass is typically 16mm thick heat strengthened laminated and patch supported at each corner via stainless steel cast spiders.

The glass around the edges of the canopy is 20mm thick due to the requirement for a 500mm cantilever. The link between the glass plane and the cable net is via droppers of varying diameter and length and made from stainless steel circular hollow sections.

This glass canopy is one of only two canopies of this type in the world. Completion is anticipated in the coming months.



Photo: Glass Canopy under construction—Renzo Piano Building Workshop

## LSAA RESEARCH AND PROMOTIONAL PROJECTS

### CALL FOR PROPOSALS

The Lightweight Structures Association of Australasia (LSAA) invites requests from Members for funding by LSAA for the carrying out of specific projects of a research or promotional nature, which will further the aims of the Association in fostering the increased use, and more effective use, of lightweight structures.

Proposals could originate in any aspect of the design, supply, fabrication, erection, or use of lightweight structures, including, though in no way limited to:

- environmental control opportunities in lightweight structures (eg issues of lighting, thermal comfort and ventilation)
- materials performance
- (eg stiffness/strength/stress testing and monitoring methods; embodied energy

- and life-cycle analyses)
- design issues (eg choice of wind pressures; software development; performance of details)
- specification (eg improved performance clauses for use by clients and consultants)
- general promotion (eg project database generation; market data)

Requests for funding are invited in the \$5,000 to \$10,000 range, as a guide. Consideration should be given by proposers to possible funding leverage from private or government sources. The outcome of the project will require to be made available to all LSAA members.

Proposals will be reviewed by the LSAA Technical Committee, which will make recommendations to the LSAA Management Commit-

tee. Criteria for judging will include potential for furthering the Association's aims, in the light of the range of interests of the Members. The Committee's decision will be final.

There is no set format for proposals, but there should at least be a description of the following:

- aims, methods, and expected product
- potential benefit to Members
- sources of input; collaborations intended; type of output expected
- programme
- breakdown of proposed budget

Proposals and enquiries should be submitted to Richard Hough, Chair, Technical Committee, LSAA, c/- Ove Arup and Partners, PO Box 76, Millers Point, NSW 2000, to arrive by 15th December, 2000

## Introducing the Ajax Smart bolt

The Smartbolt is essentially a direct tension measuring system for high strength bolts in critical applications. Like some other tension sensing devices such as Rotabolt, it measures the amount of tensile load within the bolted system. However, the Ajax version measures to +/-1% accuracy on tightening—and gives a digital readout of the load! This represents a far greater accuracy than is available on anything other than a strain gauged bolt.

The measurement device is also removable and on re-inspection( 5,10,20 years later) is accurate to +/-5%. The measurement device is hand-held and gives a digital readout on the screen.

The unit may also be connected to a computer and can measure loads "real time".

The sampling frequency is high enough that vibrations and harmonics may also be measured via computer.

The cost of the system is only a fraction of the cost of strain gauges as well—which makes it particularly attractive to research institutions!

The bolt is also re-useable (as long as you don't exceed the elastic limit!) The bolt is available in sizes M16 upwards, PC 8.8, 10.9, Gr 5 or 8.

We will be installing the system in a series of cable clamps for a project in Singapore called Changi Airport Terminal 3 railway station. The project is designed by Meinhardt Façade Technologies and MCCalls in the UK are the cable suppliers. They are very keen on the product as are Bridon Ropes.



## LSAA 2000 Conference

The LSAA 2000 Conference "The Lightweight Challenge" was the 2000 conference of the Lightweight Structures Association of Australasia (LSAA). The conference theme focused on the challenges for the lightweight industry in the areas of design, efficiency, economy, materials and the development of new markets; the challenges that will determine the continued success and growth of the industry in coming years.

Held during the finals series of the America's Cup in Auckland, the Cup itself added considerably to the atmosphere of event. Although not a conference objective, it was fantastic to see parallels drawn between the lightweight industry and the sport of sailing. In the analysis of many of the structures presented, the use of sail technology, masts and rigging was just one of a number of obvious links appreciated by the delegates, who represented companies from Europe and North America, Australia, New Zealand and various other parts of Asia. It was within this environment that the conference looked at the health and relative standing of the local lightweight industries.

LSAA 2000 brought together a rich and spectacular collection of outstanding works and materials applications, a number of which were also entered in the LSAA 2000 Design Awards. Of seven fabric structures nominated for awards, two were amongst those recognized for excellence at the Design Awards ceremony. The Hong Kong Institute of Education Removable Canopy and the collapsible and demountable inverted cones at the new Fox Studios Parade Ring in Sydney. Both projects demonstrated the minimal use of materials, which combined with efficient design of structural systems to meet the design loads.

The judges noted that the Hong Kong removal canopy was "an excellent example of a tension struc-

ture revitalising an external space". Of the Fox Parade Ring their comments include "provide a theatrical use of tension structures with a high degree of demountability; and gives the appearance of permanency but can be demounted quickly". Aside from fabric, other materials to feature in award winning designs include some interesting structural applications of sled glass and timber.

The LSAA 2000 Conference provided a rare and unique insight into the state of the lightweight structures industries in the Australasian region. In its success, the conference highlighted the ever challenging need for structures of innovation and striking form, for structures that afford visual simplicity, while utilizing ; lightweight structural concepts and principles to meet the overall design objectives. The emphasis on the minimalist approach demonstrated so clearly in the works at the conference, definitely stands the Australasian industry well for future challenges.



## NEWS

### Spacetech and Structureflex Part of New Global Name – "Skyspan"

Spacetech and Structureflex along with three overseas firms (Koch Membrane Structures, Hightex and Membrane Asia) have been acquired by Skyspan, forming a new global company in the manufacture, design and assembly of membrane structures.

They combine the largest manufacturing capacity in the world with technical expertise from over five decades in the business.