

ARTICLE

ALBESILA'S TRAVELS ARCHITECTS OF AIR

REPORT

TEXTILE ROOFS 2017

RESEARCH

KINEMATIC FORM-ACTIVE STRUCTURES



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Tensinet **INFO**

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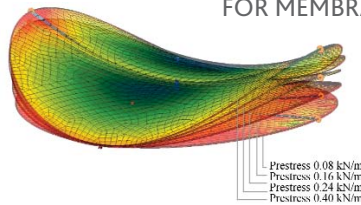
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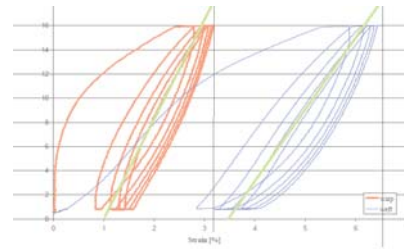


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Edito

Dear Reader,

I am glad to present you our new TensiNews. Recent research activities are presented in this issue, as well as actual membrane and foil projects.

The VUB Brussels is introducing the research results of Kinematic form-active structures for architectural applications, giving a summary of the workshop *Lightweight Structures*, that was held in the academic year 2016/2017.

One of our partners is presenting the advantages of integrated non-linear analyses for textile architecture, combining the membrane with the primary structure, so that the interaction is properly taken into account.

Two membrane roofs in Germany, with almost the same age of approximately 25 years have been refurbished recently. Both examples, the Mercedes Benz Arena in Stuttgart and the open air theatre in Tecklenburg show that all the main structural elements can be reused, and by renewing the membrane cladding, the roof structures can be up for another 20 to 25 years, with new brilliant appearance.

Other worldwide projects shown are a canopy in Germany, an ETFE tunnel in Kuala Lumpur, a pavilion in Kazakhstan and an amphitheatre in Canada. Furthermore the architects of air from the UK present work from the past 25 years.

The events this year started with *Techtextil and Textile Roofs* this May in Frankfurt and Berlin. Joseph Llorens was so kind to prepare a summary of *Textile Roofs 2017* for us. After the summer break there will be a lot of other important conferences, like the IASS Symposium in Hamburg end of September, and *Structural Membranes in Munich* in October. During *Structural Membranes* we will have also our partner meeting and the annual general meeting.

The TensiNet partners have decided that the next TensiNet Symposium will be held in 2019 in Milan. Details and a call for abstracts will follow soon.

I hope to meet you on one of these events after the summer. Meanwhile please enjoy this issue of TensiNews.

Yours sincerely,
Bernd Stimpfle



Forthcoming Events

TENSILE intense program at IMS

16 – 24/09/2017 | IMS e.V.
Archineer® Institutes Dessau-Rosslau,
Germany
www.tensile-intense.com

pre-symposium activities IASS

Workshops & Master classes
20-24/09/2017 | HafenCity
Universität Hamburg, Germany
http://iass2017.org/frontend/converia/media/IASS17/Workshops/IASS17_booklet_ws-mc_rev5_2017-06-02.pdf

International symposium of the International Association for Shell and Spatial Structures IASS 2017
"INTERFACES: ARCHITECTURE . ENGINEERING . SCIENCE".
25-28/09/2017 |
HafenCity Universität Hamburg,
Germany
<http://iass2017.org/>

12th International Conference on Building Envelopes of the Future

02 – 03/10/2017 | Congress Center
Kursaal, Bern, Switzerland
<https://abs.green/program-2017>

VIII International Conference on Textile Composites and Inflatable Structures Structural Membranes 2017

Munich, Germany |
09 – 11/10/2017
<http://congress.cimne.com/membranes2017>

Aachen-Dresden-Denkendorf

International Textile Conference 2017
Stuttgart, Germany | 30/11 –
01/12/2017
www.aachen-dresden-denken-dorf.de/itc

International workshop Textile Roofs 2018 15-17/05/2018
www.textile-roofs.de

Architect meets innovations



TensiNet Partner Sioen was represented with an inspiring tensile structure at architect@work, Kortrijk XPO (BE) held on 27 & 28 April 2017.

Please let us know when you are planning to exhibit at an architect@work event.

Extra information: <http://www.architectatwork.com/>

RESILIENCE & LIGHTNESS – TS2019

At the beginning of June 2019, Politecnico di Milano and its accredited laboratory on textiles and polymers TextilesHUB will host the next TensiNet Symposium, focusing on Lightness and its impact on global sustainability challenges. In an ever-changing world, innovative technologies are constantly redefining disciplines and mindsets, causing disruption and creating new hybrid concepts that are more resilient to keep up with rising sustainability demands. In this turbulent process, concept of Lightness has becoming more sound and profound, shifting its essence from vision to necessity. The conference explores these emerging scenarios of the disciplines - with the specific focus on membranes, foils and ultra-lightweight structures - and sets a new perspective for a new age of disruption that will challenge resilience and shape of both the Lightweight Architecture and the Membrane-based Construction of the future.

During the 3-days symposium: a) an exhibition will highlight the most interesting advancement of every european region associated to TensiNet; b) a field trip to the newest construction in Milan, like Regione Lombardia, City Life, Scalo Milano, Bosco Verticale will be organized.
POLIMI team: Alessandra Zanelli, Carol Monticelli, Nebojsa Jakica and Salvatore Viscuso.

Forthcoming Meetings

TensiNet Meetings at Structural Membranes 2017
10/10/2017 at 18.00
Annual General Meeting & Partner Meeting

Final

COST-ACTION TU 1303 NOVEL STRUCTURAL SKINS
MEETING AT VUB, BRUSSELS, BELGIUM
17/10/2017

<http://www.novelstructuralskins.eu/events/meetings/>



REDESIGN FORECOURT FOR CONGRESS HOTEL Düsseldorf, Germany

The new canopy is docked to the hotel's forecourt in a floating ease and as this it provides a new eyecatcher for the Lindner Congress Hotel in Düsseldorf.

A circular steel ring with a diameter of 12m is covered with a two-layer ETFE membrane, formed as a cushion by means of the necessary air pressure. In the outer border area, a fine rope net consisting of 20 round-strand ropes lies on the upper side as well as on the lower side of the cushion.

This gives the desired form to the cushion - namely as a lens - and also keeps it in shape. In addition, the effect of a lens is intensified by the choice of the colour of the material and purposeful lighting. For the outer border area a white, less translucent membrane is used.

3M GERMANY

TUNNEL IN THE AIR MADE OF ETFE FILM CUSHIONS

LIGHTWEIGHT SOLUTION AS NOISE BARRIER AND PRIVACY SHIELD FOR RESIDENTS

Kuala Lumpur,
Malaysia

Every few minutes the driverless Kelana Jaya Light Rail Train (LRT) on an elevated railway squeezes its way through the sea of houses in the conurbation of Kuala Lumpur, the capital city of Malaysia. At the narrowest point the track runs less than three metres away from a residential building and a hotel. To protect the residents from the high noise stress, Malaysia's first "tunnel in the air" has been built. It encloses a curved section of the track with 363 film cushions, which are made from the high-performance 3M Dyneon Fluoroplastic ETFE.

Introduction

Economic success in Asia has also inflated its traffic problems to new dimensions. The solution of choice is the development of local public transport. That is also the case in the Kuala Lumpur conurbation in

Malaysia, whose seven million inhabitants make it one of the most densely populated regions on the peninsula. In recent years, the route network of the Kelana Jaya LRT elevated railway has been expanded to almost 50 kilometres.

The construction of the elevated railway relieves the traffic at ground level in the same way as underground railways, but is considerably less expensive to build. At the narrowest point of the most recent development stage, the

distances between the track and the nearest house and hotel are less than three metres. That leads not only to enormous noise stress for the residents. The train passengers also had a direct view into the homes and hotel rooms. Therefore, "Prasarana Rail and Infrastructure Projects", who operates the line, decided to equip the narrow point with noise protection elements and to erect a "tunnel in the air" as a privacy shield.



Figure 1a - b. The air tunnel encloses a curved section of the track with 363 film cushions, which are made from the high-performance 3M Dyneon Fluoroplastic ETFE © Architen Landrell
Figure 2. The ETFE films for the roughly 2.500m² of exterior surface feature a smooth surface so that a rain shower is sufficient to clean them. That reduces the operational costs.