

TensiNews

NEWSLETTER OF THE EUROPEAN BASED NETWORK FOR THE DESIGN AND REALISATION OF TENSILE STRUCTURES

www.tensinet.com

NEWSLETTER NR. 15 - OCTOBER 2008 - PUBLISHED TWICE A YEAR

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EDITORIAL

TensiNet is becoming stronger: the 'team' supporting the Association is consolidating and the dissemination and networking activities are increasing. The whole group working in the field of tensile surface structures is growing. Since the beginning of August Evi Corne has been working part-time for the TensiNet Association. We were able to finalise this issue before the Annual General Meeting (10th of November in Stuttgart) thanks to her help!

We had a meeting with the graphic designers T.M.&C. (Talent, Marketing & Communication) and from 2009 we will change the 'style' to improve the readability of the newsletter and include larger photos.

On the website www.tensinet.com, under Tensinet News, events and contract proposals are announced. TensiNet is supporting the Techtextil Student Competition 2009 and an invitation to participate has been sent to our 'school' members. TensiNet is present at the Futurotextiel08 Fair (from 9 October until 7 December, Kortrijk) with a continuous slide show displaying recent projects and in the exhibition with samples of the used materials.

The Special Issue No. 4 of Vol. 23 (last of this year) of the International Journal of Space Structures will be entitled 'Tensioned membrane construction'. Papers in this Special Edition were selected from those presented at the TensiNet Symposium 'Ephemeral Architecture: Time and Textiles' held at the Politecnico di Milano, in 16-18 April 2007.

The Working Groups Website&Database, Analysis&Materials and Specifications have started up or continue their activities.

We kindly invite all TensiNet members to participate in the next Annual General Meeting to be held on the 10th of November, in Stuttgart. We hope to meet you in Stuttgart.

Marijke Mollaert

Heidrun Bögner-Balz

Annual General Meeting TensiNet Partner Meeting Monday 10th November 2008 - STUTTGART

Dear Tensinet members,

We would like to kindly invite you to the next TensiNet Meetings on Monday the 10th November 2008 in Stuttgart. The morning lectures will present research results and new projects. In the afternoon during the Annual General Meeting it will be possible to comment on the current activities of the TensiNet Association. The Partner Meeting will start at 3pm. During the Partner meeting a new Board will be elected.

LOCATION

University of Stuttgart,
Pfaffenwaldring 27, Lesesaal



EXTRA VISIT

1 During the TensiNet Meeting day you are kindly invited to visit Labor Blum.

2 Guided visit to New Architecture in Stuttgart Sunday the 9th November 2008 or subsequently to the meetings like e.g. the new Mercedes-Museum, the new modern arts gallery and the new exposition halls.

Interested? Send a mail to heidrun.boegner@gmx.de before 27th October. Extra information will be sent.

CONFIRMATION

Confirmation of attendance for the morning lectures, the annual general meeting & partner meeting is obligatory. Send an e-mail before the 27th October to heidrun.boegner@gmx.de and a CC to ecorne@irexchange.vub.ac.be.

PROGRAM

9:30 - 12:00 PRESENTATION

1 - Prof. Dr.-Ing. K.-U. Bletzinger

New developments for the analysis of membrane structures.

Stress singularities which are arising from the theoretically based cutting patterns will be analysed.

2 - Labor Blum

New materials and their importance for the environmental performance by simulation and measurement will be presented.

3 - Dr.-Ing. D. Ballhause



The failure of uni-axially and bi-axially stressed materials analysed on the basis of the Weibull assumptions of probability for the fracture of multi-filament yarns. Extracted results of his thesis will be shown.

4 - Schlaich-Bergemann and Partner

Actual projects will be presented.














12:00 - 13:30 LUNCH BREAK

13:30 - 15:00 ANNUAL GENERAL MEETING
& WORKING GROUPS

15:00 - 17:00 PARTNER MEETING

	Architen Landrell www.architen.com
	Canobbio S.p.A. www.canobbio.com
	Ceno Tec www.ceno-tec.de
	Dyneon www.dyneon.com
	Ferrari sa www.ferrari-textiles.com
	Form TL www.Form-tl.de
	W.L. Gore & Associates www.gore.com/tenara
	IMS www.ims-institute.org www.membranestructures.de
	Messe Frankfurt Techtextil www.techtexsil.de
	Mehler Technologies www.mehler-technologies.com
	Taiyo Europe www.taiyo-europe.com
	technet GmbH www.technet-gmbh.com
	Verseidag www.vsidutex.de
	Saint-Gobain www.sheerfill.com

founding partners

	Buro Happold www.burohappold.com
	Group ALTO www.groupealto.fr
	Kurvenbau www.kurvenbau.com
	Laboratorium Blum www.labor-blum.de
	Schlaich Bergemann und Partner www.sbp.de
	Tensotech Consulting www.tensotech.com
	Tentech www.tentech.nl
	University of Bath www.bath.ac.uk/ace
	Technical University of Berlin www.survey.tu-berlin.de
	Vrije Universiteit Brussel www.vub.ac.be
	Nottingham Trent University www.ntu.ac.uk/research/school_research/sbe/index.html
	Universidad Politécnica de Madrid www.aq.upm.es
	University of Newcastle www.ceg.ncl.ac.uk

Forthcoming Events

Futurotextiel 08

Surprising textile, design & art
International
exhibition

Kortrijk, Belgium
9/10 > 7/12/2008



www.futurotextiel.com

IFAI Expo '08

Trade show and Symposiums

Charlotte, NC USA
21 > 23/10/2008



www.ifaiaexpo.com

IASS 2008 & 3rd Latin American Symposium on Tensile Structures

International Symposium

Acapulco, Mexico
27 > 31/10/2008



The "Simposio Latinoamericano de Tenso-Estructuras" (Latin American Symposium on Tensile Structures) was first celebrated at the School of Architecture and Urbanism of The University of Sao Paulo, Brazil in 2003, and it was successfully received by professionals, students and common public. The second edition was celebrated at the Central University of Caracas, Venezuela in 2005, and now, in its third edition, it will be celebrated simultaneously with the IASS 2008 Symposium, Acapulco, Mexico (International Association for Shell and Spatial Structures).

This symposium is organized by the Red Latinoamericana de Tensoestructuras (Latin American Working Net of Tensile Structures), whose objective is to promote and stimulate the development, design and construction of tensile structures, by means of creating a discussion forum on these topics for researchers, professionals, enterprises and students.

<http://iass2008.unam.mx>

IBERTOLDO 2008



International Biennale
Fira de Cornellà,
Barcelona, Spain
29 > 31/10/2008

www.ibertoldo.com

Roof & Cladding India 2009

International Symposium

Chennai, India
23 > 25/04/2009



www.roofindia.com

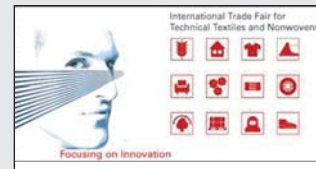
Textile Roofs 2009



Workshop
Berlin, Germany
11 > 13/06/2009

www.textile-roofs.com

Techtextil 2009



International
Trade Fair &
Symposium
Frankfurt,
Germany

16 > 18/06/2009

www.techtexsil.messefrankfurt.com

Structural Membranes 2009

International Conference

Stuttgart, Germany
05 > 07/10/2009



www.congress.cimne.upc.es/membranes09

Tensinet Partner Meeting & Annual General Meeting

Stuttgart, Germany, 10/11/2008
www.tensinet.com/content/view/60/92/

Tensinet NEWS INFO

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FUTUROTEXTIEL 08

'Futurotextiel 08', an association of science, technology, art and textiles, is inspired by the craziest dreams and invents today our dreams of tomorrow. The exhibition co-organised by lille3000 and the town of Kortrijk is being held from the 9th of October to the 7th of December 2008. It shows the concrete visions of tomorrow's textiles, which will change our relationship with the world, our environment and ourselves. The first 'Futurotextiles' exhibition was held in 2006 at the Tri Postal in Lille. More than being an exhibition, it embodies the realisation of essentially European research being developed in the world of textiles. For the reader and visitor, it means the discovery of the world of textiles, as he/she appreciates its incredible diversity, from the fibre or weaving and the stitch to the composites and non-woven materials. The origins of the fibres are sometimes strange: a crab's carapace, a basalt stone or beetroot give birth to a fibre, thread or tissue. The new fibres seem to have emerged directly from science fiction. Interactive and intelligent, they are subjected to different techniques of coating, dressing and micro-encapsulation... Whether cosmetic or therapeutic, the 'biosensorial' textiles alter their physical properties according to environmental conditions, becoming anti-bacterial, thermoregulatory, hydrophilic, therapeutic... In this discovery of the world of textiles, also building and architecture receive particular attention.

Buildtech – Textile Architecture

Since the dawning of time, woven materials have been used for the construction of all sorts of shelter: small ones (tipis), adaptable ones (canvas), transportable ones (circus marquees), large canvas covers (the Velum in the Colosseum of Rome), simple sunscreens (parasols) or even

thermally isolated buildings (yurts). Since the middle of the 20th century, several architects (Frei Otto, Bodo Rasch...) and engineers (Horst Berger, Jörg Schlaich...) have granted technical textiles a real place as a fully-fledged building material, just like the reference materials of stone, steel, concrete and glass. The main added value provided by technical textiles is their lower weight.

Textiles from natural fibres have a limited lifespan and solidity. The use of new synthetic fibres, coatings and surface coatings, enable the technical textile to respond to the specific demands in the following areas: texture, appearance, colour, flexibility and transparency, differentiated reflection of radiation, self-cleaning, acoustic and thermal insulation, high strength, weld ability and finally, the integration of photovoltaic cells. In terms of lifespan, depending on the material and environmental conditions, a reliable period of 20 to 35 years is predicted, without the appearance of any kind of problems.

The textile becomes a multi-functional component, which is adaptable or re-adjustable according to the application to which it is assigned. Ongoing exploration on the quality and performance is triggered by collective research (www.context.eu) and thematic networks (www.tensinet.com).

Evidently, the textile remains a supple support. In order to be inserted into a building it is forced into double curvature. Tension is applied to the whole surface (like in an open umbrella) or by means of internal pressure (like in a balloon). The forms are 'forms of equilibrium', in the image of a spider's web or a soap bubble, capable of adhering to any surface.

The pioneers of architectural textiles emphasise expressive curves and unusual constructions. Thanks to an adapted curvature, it is possible to transfer the loading pressure efficiently to the support points. Nevertheless, the tendency is towards constructions that are barely curved. These are realisable, when the material is sufficiently pre-tensed over shorter distances. In addition to progress in the world of technical fibres and their coatings, an improvement has equally been attained in calculation techniques as well as software tools. Architects, engineers, manufacturers, builders and entrepreneurs all have access to specialised computer programmes and systems for analysis and design. In order to obtain a satisfying result, it is essential that all the players in the project collaborate from the outset. Transport, assembly and anchorage factors must equally be integrated. Tensioned textiles are used for diverse applications in construction. While in the 1930s, architecture concentrated on ephemeral constructions, ever more 'permanent' projects are initiated in shopping centres, cultural buildings, stadiums, schools, etc. In the current tendency, tensioned textiles can fulfil the demand for more curved forms. With their natural shapes, architectural textiles can easily find their place beside the massive volumes, where, thanks to their lightness (both physically and figuratively), they are capable of creating a contrast beside more imposing structures. Textiles can also facilitate reconciliation between newer creations and what already exists.

Marijke Mollaert for *futurotextiel08*

www.futurotextiel.com

INTERNATIONAL JOURNAL OF SPACE STRUCTURES (IJSS)

editor: Professor R. Motro

published quarterly

ISSN 0266-3511

The aim of the journal is to provide an international forum for the interchange of information on all aspects of analysis, design and construction of space structures.

The scope of the journal encompasses structures such as single-, double- and multi-layer grids, barrel vaults, domes, towers, folded plates, radar dishes, tensegrity structures, stressed skin assemblies, foldable structures, pneumatic systems and cable arrangements. No limitation on the type of material is imposed and the scope includes structures constructed in steel, aluminium, timber, concrete, plastics, paperboard and fabric. The journal aims at striking a balance between theory and practice and creating a platform for exchange of information between structural engineers, architects, civil engineering contractors, system manufacturers and research workers in academic and non-academic establishments.

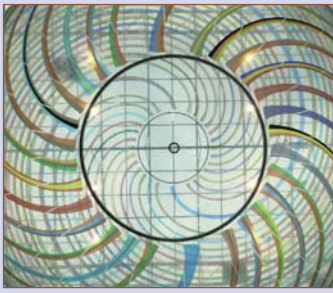
The journal includes regular reviews of technical publications, books and trade literature. Also included is information on recently built important space structures, recently held conferences and forthcoming events of interest. The Journal also publishes Special editions.



One of the forthcoming Special editions will be "Tensioned membrane construction". Papers in this Special Edition were selected from over 40 presented at the TensiNet Association Symposium "Ephemeral Architecture: Time and Textiles" held at the Politecnico di Milano, in 16-18 April 2007. They cover a wide range of topics, from Campioli, Mangiarotti and Zanelli's historical review of textile architecture in the Italian context, and Hennicke's inspirational account of relationships between lightweight and natural structures and tensile architecture, to the more mathematically analytical approach in Gosling and Bridgens' presentation of a new concept for materials testing of architectural fabrics and Wagner's paper describing simple analytical design/checking tools for single/double-curved membranes and inflated cushions. To complement these, Adriaenssens examines the feasibility of spliced-spine stressed medium-span membranes and, as a practical case study, Stimpfle describes the redesign and installation of the Velodrome roof in Abuja, Nigeria.

For more info see

www.multi-science.co.uk/space.htm



BUITINK TECHNOLOGY FABRICATES AND INSTALLS TRANSPARENT INFLATABLE GLOBE AND GIANT LIGHTWEIGHT MIRRORS IN THE ATRIUM OF THE JUSTUS LIPSIUS BUILDING IN BRUSSELS (BELGIUM)



Buitink Technology fabricates and installs transparent inflatable globe and giant lightweight mirrors in the atrium of the Justus Lipsius Building in Brussels (Belgium)

Since July 2008, France has the Presidency of the Council of the European Union. For the design of the interior of the EU building Justus Lipsius in Brussels, the French government contracted the well known French architect agency "Dubuisson Architectes" in Courbevoie (France).



An important part of the design is a huge transparent globe (15m diameter) in the middle of the atrium that is printed with the different flags of the members of the European Union. This globe is hanging in the middle of the atrium, with at both sides a giant mirror with a size of 12m x 10m.

The transparent exterior features 28 coloured strips which reflect the flags of the Member States and the European Union. These suspended strips, which twist in spirals around

the globe, have been printed in translucent inks (except the white which, for technical purposes, is more opaque) to enhance the globe's transparency and heighten the overlay effects. They not only reflect the individuality of each country, but also create an overall harmony through the combination and juxtaposition of the colours in an upward movement. The reason for placing the two huge inclining mirrors on either side of the globe becomes apparent at a key point at the very heart of the foyer. Anyone crossing the foyer who stands at this point under the globe, can glance up and see the logo of the French Presidency

reflected in the mirrors against the coloured strips. From this focal point, the globe fills the whole space of each mirror.

In the top of the globe, a ring with LED lighting is installed, that lights the different flags in different colours.

The globe is made from a strong and transparent ETFE film. The globe is kept under pressure by an automatic air system.

The two mirrors of 10m x 12m are made of aluminium frameworks, which are clad with a lightweight (80g/m²) mirror film.

Rienk de Vries

info@buitink-technology.com

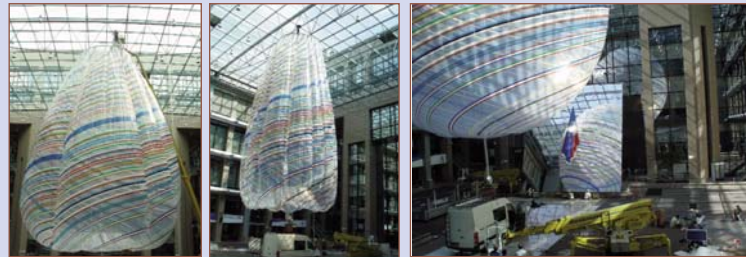


Figure 3. Installation of the globe and mirrors

Figure 1. Inflatable globe

AMPHITHEATRE OLIMAR

Originally there was a metal amphitheatre that was destroyed in a storm wind. The idea was to rebuild it with a more functional roof for the scope. The new construction is a membrane tensioned over 2 longitudinal reticulate arches, with 28m span each one, stabilized by 3 structural lines anchored to the floor and giving stability to the entire roof. The membrane is attached to the structure with ropes.

The objectives of the new roof are the following:

1. The need for a special design that is more suitable for the amphitheatre, that works better acoustically and that achieves best visual effects of the show, either day or night through the lighting of the shows;
2. Low building costs;
3. Rain protection;
4. Easy installation and the need for a demountable structure.

Finally was chosen for a prestressed PVC-membrane on the basis of following two reasons:

1. It strictly complies with all the objectives;
 2. When compared to other traditional systems such as metal or concrete construction, these traditional systems do not meet all the requirements, not offering the aesthetic and formal opportunities PVC membranes can offer.
- The roof has been designed respecting the minimum height to

develop shows, and generating a membrane with double curvature to encourage the good diffusion of the sound for the spectators. The structure and the membrane were designed at the same time. The metal structure is made of arches in round pipes 5" and 2" and the anchorage in Platinum in 1". The membranes are made of polyester fabric (PES HT 1100dtx, 5x5 threads per cm (12 threads per inch) with PVC coating, UV protection on the outside, a weight

