TensiNews

Newsletter of the European based Network for the Design and Realisation of Tensile Structures

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REPORT

TEXTILE ROOFS 2025

PROJECTS

Tensile structure covering a Padel Court
Membrane Magic in Croatia

Illuminated parts in combination with special membranes by SATTLER PRO-TEX create the most spectacular atmosphere in Dubrovnik ©Belina d.o.o.

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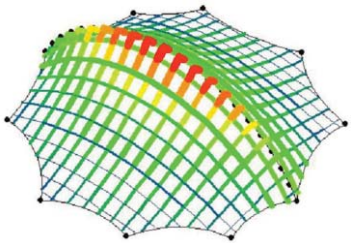

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INTERESTED TO PARTICIPATE

in the TensiNet Symposium 2026
& Essener Membranbau Symposium 2026 ?!

Edito

Dear Reader

I am glad to present the 49th edition of our TensiNews, which is again full of inspiring information. This year, TensiNet became 25. We celebrated this with a cocktail party directly after the 100 years Frei Otto event at ILEK, where almost everybody from our industry was present.

Our Sustainability and Comfort working group continues its work to find a solution to avoid a PFAS ban for our products, and is working on a general LCA for membranes. Especially the first topic is very important for our future as an industry, so please contribute with your individual knowhow to support our efforts.

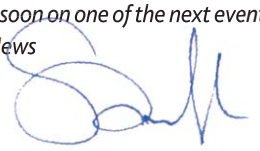
Our Specifications and Eurocode working group supports TC 250 WG5 on its way to transform our technical specification into Eurocode 12. Beside the main part we establish at the moment execution rules along side with the design part. We are convinced that execution quality is an essential fundament to support our design approach, that's why we are allowed to integrate this into a Eurocode which is typically just related to design. We would be glad to consider more voices from manufacturing and installation into this work. If you are not involved yet, please contact us, to get also your input integrated.

Some of us were present at Textile Roofs, the yearly conference and workshops about textile architecture taking place in Berlin. Josep Llorens prepared a very comprehensive report filling a major part of this issue of TensiNews. The report summarizes all the contributions form history over design and projects to research, products, manufacture and maintenance. Beside this you find in this TensiNews the presentation of two recent projects, a Padel court in Belgium, and a rather special tensile structure covering a market in Croatia.

In a year from now the 8th edition of the TensiNet Symposium 2026 "Shaping the pathway to future tensioned membrane design" in Essen, which will be held in collaboration with the University Duisburg-Essen as a joined symposium with the 7th Essen Membranbau Symposium. The call for abstracts has been sent out, and we are working on the program which is split into the three main topics: "Design, Modelling and Simulation of Structural Membranes", "Materials and Execution" and "Sustainability and Building Physics". You find more details in this issue and on the conference website.

Hope to meet you soon on one of the next events. Meanwhile please enjoy this issue of TensiNews

Yours sincerely,
Bernd Stimpfle



Forthcoming Events

XII International Conference on Textile Composites and Inflatable Structures | **Structural Membranes 2025** | *8-10/10/2025* | München, Germany | **https://structuralmembranes2025.cimne.com/**

IASS Annual Symposium 2025 | *27-31/10/2025* | Mexico City, Mexico | **https://iass2025.unam.mx/**

Advanced Building Skins Conference & Expo | *3–4/10/2025* | Bern, Switzerland | **https://abs.green/2025**

Techtextil and Texprocess 2026 | *21-24/04/2026* | Frankfurt, Germany | **https://techtextil.messefrankfurt.com**

Textile Roofs workshop 2026 | *26-28/04/2026* Berlin, Germany | **www.textile-roofs.com/**

8th TensiNet Symposium 2026 & 7th Essener Membranbau Symposium 2026 | *Shaping the pathway to future tensioned membrane design* | *30/09-02/10/2026* | Institute for Metal and Lightweight Structures, University of Duisburg Essen, Germany | **www.uni-due.de/iml/tensinet-ems2026.php**

The symposium Shaping the pathway to future tensioned membrane design is dedicated to the latest developments in membrane structures. Choose one of the topics and upload your abstract
(Text only, 400 Words, 5 Keywords).

- Design, Modelling and Simulation of Structural Membranes
- Materials and Execution
- Sustainability and Building Physics
- Others

Timing: Due to repeated requests, we are extending the Abstract deadline submission to 30.09.2025
Abstract acceptance 31.10.2025
Paper submission 15.02.2026
Paper acceptance or feedback 31.03.2026
Paper submission 30.04.2026

Accepted papers will be published Open Access for high visibility of your contributions. The symposium papers will be published with ce/papers. Proceedings in Civil Engineering. Every paper will have an own DOI.

Please notice also the **Young Engineers Awards TensiNet Symposium 2026 & Essener Membranbau Symposium 2026**. We encourage young researchers and practitioners, structural designers and architects, as well as students to participate in the TensiNet Symposium 2026 & Essener Membranbau Symposium 2026 Young Engineers Awards. The best papers will be published in a peer-reviewed journal!

For more information and the terms and conditions, see www.uni-due.de/iml/te26-id12.php
Conference website: www.uni-due.de/iml/tensinet-ems2026.php#

TensiNet symposium 2026 & Essener Membranbau symposium 2026

"Shaping the pathway to future tensioned membrane design" A shared mission

Tensile architecture:
Lightness, Sustainability and Future Potential

Tension structures, which are built using lightweight fabrics and cables, provide an elegant alternative to traditional, heavy, rigid buildings. Membrane materials, such as PVC-coated polyester, PTFE-coated glass and ETFE, are valued for their lightness and translucency. Although tensile fabrics generally lack thermal and acoustic insulation, they still offer opportunities for creative and innovative applications.
The recent publication of CEN/TS 19102:2023, 'Design of tensioned membrane structures', aims to boost confidence in the analysis and safety of tensioned membranes, thereby strengthening their role in modern architecture.

Iconic masterpieces have been created using tensile structures by renowned architects such as Frei Otto, Anish Kapoor, Kengo Kuma and Zaha Hadid. In the face of urgent sustainability challenges, the potential for reuse and adaptability in design could elevate textile architecture to new heights. There is much to be explored.

Tensile structures are inherently climate-positive: they require fewer raw materials, can be easily dismantled, and their structural elements can be reused. Adaptive skins can further enhance performance by opening and closing in response to daylight, temperature or wind.

When coupled with parametric or advanced design tools, tensile structures can be optimised according to multiple criteria.

As well as providing shade, environmentally friendly designs can incorporate energy generation through photovoltaic textiles and water harvesting through canopy surfaces that direct rainwater into pools or cisterns. They can also feature integrated air purification systems.

Projects at the Osaka Expo 2025 showcase such innovations, pointing towards a future of more adaptive and resource-efficient designs. However, if textile architecture is to fulfil its potential as a sustainable, future-ready technology, the industry must accelerate its efforts to develop fully recyclable membranes.

The lightweight nature of tensile systems is a key advantage that should be emphasised. Using less material means consuming fewer resources, which is in line with the urgent need for the construction industry to rethink 'business as usual'.

Figure 1. Future of life pavilion by Hiroshi Ishiguro © www.youtube.com/watch?v=uCibXq6gDH8

Designing Future Society for Our Lives

Expo 2025, themed "Designing Future Society for Our Lives", is running until 13 October in Osaka, Japan. Aesthetic precision and innovation are characteristic of Japanese architecture. The national pavilions focus on future-oriented solutions for a more sustainable society. Innovative construction methods and materials, the circular economy and resource-efficient construction are central themes. See also https://www.expo2025.or.jp/en/official-participant/

Several lightweight designs showcase remarkable innovations or advancements in sustainable concepts:

Australia Pavilion (architect: Buchan Architects): The Australia Pavilion at Expo 2025 sets a new benchmark for sustainability, repurposing key build assets from events such as the London 2012 Shooting and Water Polo venues, the Birmingham Commonwealth Games, and the Tokyo 2020 Shooting venue to minimise waste.

Osaka Healthcare Pavilion (architect: Tohata Architects & Engineers): To appropriately filter and diffuse natural light from the roof, a new material was used, made by twisting yarn from recycled pulp and sewing it into a textile-like fabric. Lightweight and flexible perovskite solar cells are suspended in banner form.

NOIZ Pavilion (media artist: Yoichi Ochiai): This pavilion features warped, or geometric, reflective volumes framed in steel and wrapped in a newly developed mirrored membrane.

Joint Pavilion Iida Group × Osaka Metropolitan University (architect: Shin Takamatsu): The biggest challenge was affixing the Nishijin textiles to the curved surface of the structure. According to Takamatsu, the slightest error would cause the patterns on the pavilion structure to misalign when Nishijin textiles were applied. "That's why we took meticulous care with every step, focusing on making sure that the Nishijin textiles looked beautiful no matter what."

Dynamic Equilibrium of Life Pavilion (architect: Naoki Hashimoto Architects, Inc.): The pavilion minimises material consumption through its lightweight design, with the structural components strategically earmarked for post-expo disassembly and repurposing.

Luxemburg Pavilion (architect: STEINMETZDEMEYER architects – Mikan / Engineering: Ney & Partners JPN - Ney & Partners BXL – Technics: ZO Engineering Consultants): The pavilion highlights Luxembourg's know-how in the field of circular economy, shows respect for materials, and is built with standard and reusable Japanese materials.

Switzerland Pavilion (architect: Manuel Herz Architects, Basel): The architecture itself focuses on sustainability and consists of modular constructions made from reusable, recyclable materials. The result is an