

Keynote speakers TENSINANTES2023

Bruce Danziger - Danziger Engineering Collaborative, Inc. (Los Angeles, US)

www.otis.edu/faculty/bruce-danziger



The Danziger Engineering Collaborative structural engineering consultancy was founded in 2020 by Bruce Danziger. From 1988 to 2020, Bruce worked with Arup in Los Angeles, San Francisco, New York, London, and Seville. He has been the Lead Structural Engineer for many complex and challenging projects including exposition pavilions, performing arts centers, tension membrane structures, embassies and consulates, and long-span structures for airports and stadia.

Bruce is the SE 2050 champion for Berkeley, California based Tipping Structural Engineers leading the efforts to reduce the global warming potential (GWP) of embodied carbon in our building projects. Bruce also organizes an international group of tensioned membrane experts called Light Footprint that meet regularly to define best practices for quantifying the sustainability of membrane structures.

Bruce has taught and lectured at many colleges and universities. Currently, he is a senior lecturer at Otis College of Art & Design, Loyola Marymount University and at the Danube University Krems Lightweight Membrane Structures Master of Engineering program. He enjoys sharing his passion for creativity and lightweight structures with his students and collaborators.

Bruce Danziger's presentation will focus on the sustainability of tensioned membrane structures. He will discuss how to learn and share effective methods to quantify and reduce the embodied carbon of lightweight structures. He will form the speaker's duo with associate professor at Polytechnic of Milan

Carol Monticelli - Polytechnic of Milan (Milan, Italy)

<http://www.textilearchitecture.polimi.it>



Carol's research activity is characterized by a constant interest in investigating the issues of eco-sustainable design of buildings and the environmental impact in construction, with particular attention to the assessment of the properties and the environmental impacts of new ultra-lightweight materials, textiles and membranes in architecture.

Carol is associate professor for the disciplines of the Architectural Technology, architect and PhD in Technology and design for environmental quality on a building and urban scale. She carries out research activities with the Textile Architecture Network group within the interdepartmental TEXTILES Hub laboratory of the Politecnico di Milano. Her teaching activities are related to the disciplines of Architectural Technology subjects and in the Sustainability of lightweight materials.

She is Quality Manager of the biaxial mechanical testing rig at the accredited Textiles Hub at PoliMi. She took part to many research projects at the national and international scale and has taught and lectured at Italian and European Universities. Since 2016 she is coordinator of the WG Sustainability & Comfort of the European TensiNet network for the development of membrane constructions in the activity of the European TensiNet network. Author of more than 120 publications, with mentions and acknowledgments, she is co-inventor of an Italian and a European patent.

Carol Monticelli, associate professor at Polytechnic of Milan and coordinator of the TensiNet Working Group Sustainability & Comfort, will form the speaker's duo with Bruce Danziger, dialoguing on the advancements of the research on this topic in the on-going transfer to the design practice.

Grégoire Zündel - Atelier Zündel Cristea (Paris, France)



Founded in 2001 by Grégoire Zündel and Irina Cristea, AZC is an architectural firm that combines creative, technical, and organisational skills, enabling it to be involved in all phases of an architectural project: from architectural design to project management.

The projects they worked on are generated by the evolution of the city as a whole. The densification of the built environment, including in peri-urban areas, is transforming the city into a space with high renewal and mobility issues. Each project requires to consider the evolution of the programme, through an approach focused on the durability of its architecture.

The concern, today, is to study how the assembly of the elements of a building reacts to changes and the passage of time, whether at the level of the flexibility in the plans through structural frames, at the crucial moment of the © AZC choice of materials or the choice of technical systems. Finally, while remaining close to the context and the programme, the question of the simplicity of the implementation of the building is raised with regard to its strong impact on the environment. Building simpler, more adapted to the chosen site and to the evolutions of the programme, is their motto. The Atelier Zündel Cristea strategy is the one that architecture has always used: the joint design of the project, through a continuous exchange with the client and the team of consultants.

Grégoire Zündel's presentation will focus mainly on a series of pneumatic temporary structures AZC have designed for public spaces such as bridges and pavilions. Ramon Sastre, who was their consultant, will join the presentation from his technical point of view.

Ramon Sastre - Universitat Politècnica Catalunya (Barcelona, Spain)

www.talent.upc.edu; www.wintess.com



Ramon Sastre has accumulated a rich experience during his career as professor at both schools: E.T.S. Arquitectura del Vallès & E.T.S. Arquitectura de Barcelona at the Universitat Politècnica Catalunya (UPC) and as director of the first one. He loves to disseminate his knowledge around the globe and has been teaching at universities in Argentina, Brazil, Mexico, Chile, UK, Turkey, Japan, etc.

His interests and expertise lie in analyzing and designing the behaviour of membrane structures. He is a research member of SMiA (Structural morphology in Architecture), CODA (Computational Design Affairs) and SMIA (Structural Morphology in Architecture)

Ramon Sastre is also the creator of the software program WinTess, a non-linear analysis software for membrane structures. Simplicity and capability in designing and analyzing these tensile membrane systems are the basic pillars of WinTess.

Ramon Sastre is a consultant for membranes structures and has been advising AZC for the realization of several pneumatic structures. Together with Grégoire Zündel he will present the keynote lecture on pneumatic temporary structures.

Louis Ratajczak - DVVD (Paris, France)

<https://www.dvvd.fr>



Founded in 2005 by Daniel Vaniche and Vincent Dominguez, with the idea of exploring architecture as a subject at the crossroads of several disciplines, DVVD is one of the few agencies in France to offer urban planning, architecture, engineering, design and economics in a single entity. The combination of all these skills guarantees the efficiency and quality of the projects, at the service of the most demanding clients.

DVVD develops projects on all scales through the juxtaposition of programs, a constraining context or a tense economy. New or rehabilitated projects, undergoing major restructuring, of which the design of the mobile cover for the Philippe Chatrier center court at Roland Garros or the Accor Arena at Bercy are significant examples.

The keynote lecture will be given by Louis Ratajczak. His recognized experience in complex projects in France and abroad makes him the reference for the firm's engineering unit. His work covers both structural innovation for buildings and engineering structures and the design of envelopes. He is particularly concerned with the development of innovative solutions for sustainable design.

Louis Ratajczak's presentation will show the process from design to realisation of the retractable roof of the Philippe Chatrier centre court at Roland Garros.

Rosemarie Wagner - KIT (Karlsruhe, Germany)

<https://fgb.ieb.kit.edu/>



Rosemarie Wagner gained access to textile architecture during her studies and her doctorate at the University of Stuttgart. After working as a freelance engineer and employee at FESTO GmbH & Co. KG on pneumatic structures, Rosemarie Wagner got the chance for a professorship at the University of Applied Sciences Munich. Her contribution to teaching and research was as civil engineers on the one hand structural engineering for students of the Faculty of Architecture. On the other hand, she gave seminars on textile structures with the aim of introducing students of the Faculty of Architecture and Structural Engineering to the basics of this building method.

Research and development projects on textile structures during this period result in a transfer to the Karlsruhe Institute of Technology in 2010. With this, structural engineering was continued in the Bachelor's degree programme in Architecture. In the Master's degree in Architecture, the students had the opportunity to develop and built membrane structures on the M 1:1 scale in seminars.

The laboratories of the Institute of Design and Construction Engineering are available for research activities and have been used for the last 12 years to answer open questions about membrane structures.

The peculiarities lie in the investigation and development of experimental setups which are necessary for certain applications but are not found in any standard, such as the damping behaviour and the wrinkling of coated fabrics during folding and unfolding. The applications go beyond architectural application and include environmental technology, energy technology and profane tent construction.

With her broad academic background in teaching and research, the keynote lecture of Rosemarie Wagner 'Textile Architecture with or versus today challenges in built environment' attempts to link textile construction to current topics such as reducing fossil raw materials and CO2 emissions, circularity and energy technology in order to make construction more attractive.

Karsten Moritz – IMS Bauhaus® Archineer® Institutes e.V. (Dessau, Germany)
www.ims-institute.org; www.ecoworks.tech; <https://www.amaforum.com>



Karsten Moritz works as Vice President R&D Building Components at the innovative construction company ecoworks GmbH in Berlin. This company designs and constructs building envelopes for CO2-neutral living.

Karsten Moritz is a graduate structural engineer and an architect. He completed both university diploma degrees at the University of Hanover and received his doctorate at the Technical University of Munich. The subject of his doctoral thesis referred to the mechanical properties of ETFE films and their application as load bearing structural element of building envelopes. In this frame he developed a structural safety and design concept for pneumatic and mechanically pretensioned ETFE-foil constructions which is applied by engineers and building authorities since 2007. He set up a company's test laboratory for roof- and façade-components and managed it many years.

Since 2006, he educates postgraduate master students in structural design of lightweight structures at the IMS Bauhaus® Archineer® Institutes e.V., an affiliated institute of the University of Applied Sciences in Dessau. Since 2011 he is honorary professor at this University. He is licensed by the Saxony-Anhalt Chamber of Engineers as Qualified Specialist Engineer for Membrane Structures and, in cooperation with this Chamber of Engineers, he is in charge of the homonymous Specialist Engineer Teaching Programme, which has been introduced by the IMS in 2022. Furthermore, he is an active member of the German DIN Standardization Committee for the Eurocode Membrane Structures, whose introduction is planned for the next years. For a publishing house in The Netherlands, he reviews scientific papers about properties and behaviour of fluoropolymer-films and their application in the construction industry (peer review). From 2018 to 2022 he was chairman of the Architectural Membrane Association e.V. (AMA). He is committed for sustainable building with lightweight materials, efficient structures, and multifunctional systems.

Together with Jean-Christophe Thomas, Associate Professor at Nantes Université, Karsten Moritz will present the keynote lecture "Milestones of ETFE construction methods - starting points for further developments"

Jean-Christophe Thomas – GeM Laboratory, Nantes Université
<https://gem.ec-nantes.fr>



The research activities of Jean-Christophe Thomas are mainly focused on pneumatic structures, under three complementary aspects: analytical solutions, numerical calculation, and dedicated experiments. After an engineering degree (Centrale Nantes) and an aggregation of mechanics, he completed a thesis on inflatable beams and became a lecturer in 2003. After having co-supervised 5 theses in this field, he continues to work on the mechanics of inflatable elements and is currently interested in all the possible functionalities of these structures in the urban environment, as well as their environmental impact. He is also working on energy recuperators based on flexible piezoelectric elements.

He teaches at the Faculty of Science and Technology in Nantes, in the fields of structural mechanics, numerical calculation and technology. He is responsible for the Master 1 Mechanics.

Jean-Christophe is actively involved in the work on the future eurocode dedicated to membrane structures, as head of the French group. He is also responsible for the WG 5 Pneumatic Structures of the Tensinet association.

Together with Karsten Moritz, Jean-Christophe Thomas will present the lecture "Milestones in ETFE construction methods - starting points for new developments"