

Symposium Programme

Please note the schedule may be subject to change.

WEDNESDAY 26 OCTOBER

08:45 – 09:30	Registration @ The Great North Museum: Hancock, Newcastle University	
09:30 – 09:45	Welcome	Professor Phillip Wright (Pro-Vice-Chancellor for the Faculty of Science, Agriculture & Engineering, Newcastle University)
From Material to Structure and Limit States: Codes and Standardization		
09:45 – 09:50	Introduction	Marijke Mollaert and Jean-Christophe Thomas (Chair)
09:50 – 10:35	Wind Impact on Textile Structures	Keynote Speaker: Jürgen Wacker (Wacker Ingenieure, Germany)
10:35 – 11:00	Collating Wind Data for Doubly Curved Shapes of Tensioned Surface Structures (Round Robin Exercise 3)	Jimmy Colliers (Vrije Universiteit Brussel, Belgium)
11:00 – 11:25	Background to the Science and Policy Report for Tensile Membrane Structures	Natalie Stranghöner (University of Duisburg-Essen, Germany)
11:25 – 11:50	Existing Eurocodes Applied to a Membrane Structure	Lincy Pyl (Vrije Universiteit Brussel, Belgium)
11:50 – 12:15	Tarso Design Framework: expert views on standardization and best practices	Eve S. Lin (Tensile Evolution North America, USA)
12:15 – 12:40	Non Linear Behaviour of an Inflatable Beam and Limit States	Jean-Christophe Thomas (Université de Nantes-Ecole Centrale Nantes, France)
12:40 – 14:00	Lunch	
Open Session: Built Projects		
13:00 – 13:30	Optional Guided Tour of The Key (Open Session delegates)	
13:30 – 14:00	Registration Open Session	
14:00 – 14:05	Introduction	Peter Gosling (Chair)
14:05 – 14:50	Formfinding and Tectonic Articulation: making performative logics speak	Keynote Speaker: Patrik Schumacher (Zaha Hadid Office, UK)
14:50 – 15:35	Pushing the Boundaries of Textiles in Architecture	Keynote Speaker: Julian Lienhard (str.ucture GmbH, Germany)
15:35 – 16:00	KAPSARC: tensile fabric building skin	Benedict Whybrow (Tony Hogg Design, UK)
16:00 – 16:25	Climate Ribbon™, Brickell City Center Miami, Job Report	Bernd Stimpfle (formTL, Germany)
16:25 – 16:50	Cable Erection of Krasnodar Stadium Suspended Roof	Daniela Lombardini (Redaelli Tecna, Italy)
16:50 – 17:15	Break	
17:15 – 18:00	How to Build Lightweight: advances in computational engineering	Keynote Speaker: Al Fisher (Buro Happold, UK)
18:00 – 18:45	Full Metal Jacket	Keynote Speaker: Tim Lucas (Price & Myers, UK)
18:45 – 19:10	Kinetic Roof Structure: Msheireb Heart of Doha	Grunwald Gregor (Pfeifer Covertex, Germany)
19:10 – 19:35	Recent Work on the Design and Construction of Air Inflated Structures	Bob Barton (Barton Engineers, UK)
19:35 – 20:00	Special Fluoropolymers Provide Exceptional Performance in Innovative Architecture	Helmut Frisch (Dyneon 3M, Germany)
20:00	Opening of the Exhibition of Main Sponsors, Drinks and Canapes	

THURSDAY 27 OCTOBER

Parallel Session A : The Hall, First Floor

Parallel Session B : The Cloire Suite, Ground Floor

Materials and Analysis

08:30 – 08:35	Introduction	Natalie Stranghöner and Peter Gosling (Chair)
08:35 – 09:20	Bespoke Materials for Bespoke Textile Architecture	Keynote Speaker: Raul Figueiro (University of Minho, Portugal) and Martin Tamke (School of Architecture, Royal Danish Academy of Fine Art, Denmark)

Parallel Session A

09:20 – 09:45	MULTITEXCO: high performance smart multifunctional technical textiles for the construction sector	Pieter Heyse (Centexbel, Belgium)
09:45 – 10:10	A Project Oriented Approach to Determine Membrane Properties	Bernd Stimpfle (formTL, Germany)
10:10 – 10:35	Including Shear in a Neural Network Constitutive Model for Architectural Textiles	Peter Gosling (School of Civil Engineering and Geosciences, Newcastle University, UK)

Parallel Session B

09:20 – 09:45	Refined Biaxial Test Procedures for the Determination of Design Elastic Constants of Architectural Fabrics	Jörg Uhlemann (University of Duisburg–Essen, Germany)
09:45 – 10:10	Quantitative Study of the Impact of Biaxial Test Protocols on the Derived Material Parameters for a PVC Coated Polyester Fabric	Maarten Van Craenenbroeck (Departement of Architectural Engineering, Vrije Universiteit Brussel, Belgium)
10:10 – 10:35	Computational Cutting Pattern Generation using Isogeometric B-Rep Analysis	Ann-Kathrin Goldbach (Technische Universität München, Germany)
10:35 – 10:55	<i>Break</i>	

Parallel Session A

10:55 – 11:20	Beyond Static Analysis: investigation of membrane structure performance using time stepping, transient and progressive analyses	Adam Bown (Tensys Ltd, UK)
11:20 – 11:45	Advances in the Form-Finding of Structural Membranes	Benedikt Philipp (Technische Universität München, Germany)
11:45 – 12:10	Viscous Characteristics of ETFE Film Sheet Under Equal Biaxial Tensions	Tatsuya Yoshino (Technical Research Center, Taiyo Kogyo, Japan)
12:10 – 12:35	Fibrous Tectonics: a rethinking of composite production through innovation and exploration of molding techniques and methodologies	David N. Costanza (Massachusetts Institute of Technology, USA)
12:35 – 13:00	On the Mechanical Behaviour of ETFE-films: elastic range, yielding conditions, break determined by different test methods and the influence of the results on the analysis of ETFE-structures	Rainer Blum (DEKRA Automobil GmbH, Germany)

Parallel Session B

10:55 – 11:20	Surface Modification of Natural Fibers: a review	Juliana Cruz (University of Minho, Portugal)
11:20 – 11:45	Variation of Reference Strategy: a novel approach for generating optimized cutting patterns of membrane structures	Kai-Uwe Bletzinger (Lehrstuhl für Statik, Technische Universität München, Germany)
11:45 – 12:10	Fluid-Structure Interaction Simulation of Pre-Stressed Flat Membrane Structures	Raham Zarfam (SL Rasch GmbH, Germany)
12:10 – 12:35	Multi-Scale Simulation of Textile Membrane Structures	Thomas Gereke (TU Dresden, Institute of Textile Machinery and High Performance Material Technology, Germany)
13:00 – 14:00	<i>Lunch</i>	

Sustainability and Life Cycle Analysis of Structural Skins

14:00 – 14:05	Introduction	John Chilton and Alessandra Zanelli (Chair)
14:05 – 14:50	Sustainability: the art of modern architecture	Keynote Speaker: Carl Maywald (Vector Foiltec, Germany)
14:50 – 15:15	Elspe Grand Stand Canopy: Mehler replaces Mehler after 37 years	Katja Bernert (Low & Bonar, Germany)
15:15 – 15:40	Life Cycle Design And Efficiency Principles For Membrane Architecture: towards a new set of eco-design strategies	Carol Monticelli (Polytechnic University of Milan, Italy)
15:40 – 16:05	A Study On The Durability Properties Of Textile Membranes For Architectural Purposes	Raul Figueiro (University of Minho, Portugal)
16:05 – 16:25	<i>Break</i>	

Building Physics and Energy Performance of Structural Skins

16:25 - 16:30

Introduction

John Chilton & Alessandra Zanelli (Chair)

Parallel Session A

16:30 - 16:55

Analysis of a Translucent Insulated Triple-Layer Membrane Roof for a Sport Centre in Germany

Jan Cremers (Stuttgart University of Applied Science, Germany)

16:55 - 17:20

Comparative Study of a New IR-Absorbing Film to Improve Solar Shading and Thermal Comfort for ETFE Structures

Jan Cremers (Stuttgart University of Applied Science, Germany)

17:20 - 17:45

The Effect of Water Spray Systems on Thermal and Solar Performance of an ETFE Panel for Building Envelope

Andrea Giovanni Mainini (Polytechnic University of Milan, Italy)

17:45 - 18:10

Understanding Light in Lightweight Fabric (ETFE Foil) Structures through Field Studies

Benson Lau (University of Nottingham, UK)

Parallel Session B

16:30 - 16:55

Performance Analyses of the D'adif Pavilion

Mariangela De Vita (University of L'Aquila, Italy)

16:55 - 17:20

Applicability of Flexible Photovoltaic Modules onto Membrane Structures Using Grasshopper Integrative Mod

Hend Ibrahim (University of Nottingham, UK)

17:20 - 17:45

Acoustic Conditions in the Atrium of Slovak Philharmonic

Monika Rychtáriková (Slovak University of Technology in Bratislava, Slovakia)

17:45 - 18:10

Acoustic Comfort in Atria Covered by Novel Structural Skins

Daniel Urbán (AandZ Acoustics s.r.o., Slovakia)

18:10 - 19:30

Optional Guided Tour of The Key

18:15 - 18:45

TensiNet Annual General Meeting

18:45 - 19:15

TensiNet Partner Meeting

20:00

Symposium Dinner

FRIDAY 28 OCTOBER

Parallel Session A : The Hall, First Floor

Parallel Session B : The Cloire Suite, Ground Floor

New Applications of Structural Skins and New Concepts

09:00 - 09:05	Introduction	Lars De Laet and Tim Ibell (Chair)
09:05 - 09:50	Fibres Rethought: towards novel constructional articulation	Keynote Speaker: Jan Knippers (Institut für Tragkonstruktionen und Konstruktives Entwerfen, University of Stuttgart, Germany)
09:50 - 10:15	Structural Membranes Used in Modern Building Facades	Christoph Paech (Schlaich Bergermann Partner, Germany)
10:15 - 10:40	Ontario Celebration Zone Pavilion: a large pneumatic structure	Hauke Jungjohann (Thornton Tomasetti, USA)
10:40 - 11:00	Break	
11:00 - 11:25	Recent Work on the Design and Construction of Air Inflated Structures	Bob Barton (Barton Engineers, UK)
11:25 - 11:50	Exploratory Topology Modelling of Form-Active Hybrid Structures	Anders Holden Deleuran (Center for Information Technology & Architecture, KADK, Denmark)
11:50 - 12:15	Calibrated Modeling of Knitted Fabric as a Means of Simulating Textile Hybrid Structures	Michel Schmeck (Department for Structural Design & Technology (KET), University of Arts Berlin, Germany)
12:15 - 12:40	Deployable Textile Hybrid Structures: design and modelling of kinetic membrane-restrained bending-active structures	Brancart Stijn (Architectural Engineering Lab (Æ-LAB), Department of Architectural Engineering, Vrije Universiteit Brussel, Belgium)
12:40 - 13:05	Deployable Structures Using Non-Singular Rigid Foldable Patterns	Ruud van Knippenberg (Eindhoven University of Technology, The Netherlands)
13:05 - 14:05	Lunch	
14:05 - 14:50	Unlocking the Potential of Insulated Fabric	Keynote Speaker: Gordon Mungall (Arup, UK)

Parallel Session A

14:50 - 15:15	Textile Structures for Climate Control	Stefania Lombardi (Canobbio Textile Engineering srl, Italy)
15:15 - 15:40	The Sustainability of Adaptive Envelopes: developments of kinetic architecture	Marta Barozzi (Politecnico di Milano, Architecture, Italy)
15:40 - 16:05	Development of a Flexible, Light Weight Structure, Adaptable to Any Space Through a Shape Shifting Feature	Fernando Cunha (University of Minho, Portugal)
16:05 - 16:25	Break	

Parallel Session B

14:50 - 15:15	Adaptive Arch: active stress minimization in a thin arch structure	A.P.H.W. Habraken (Department of the Built Environment Eindhoven University of Technology, The Netherlands)
15:15 - 15:40	Halar® High Clarity ETFE Film: a highly transparent film for new buildings structures	Paolo Toniolo (Solvay Specialty Polymers, Italy)
15:40 - 16:05	Thermal and Optical Analysis of a Passive Heat Recovery and Storage System for Greenhouse Skin	Xiao Liu (Department of Architecture & Built Environment, Faculty of Engineering, University of Nottingham, UK)
16:05 - 16:25	Break	

Parallel Session A

16:25 - 16:50	How an Innovative Membrane Brought a Vision to Life	Wiktor Kowalski (Buro Happold Limited, UK)
16:50 - 17:15	Design and Manufacturing of the Linko Demountable Fabric Pavilion for the Motorsport Sector	Paolo Beccarelli (Department of Architecture & Built Environment, University of Nottingham, UK)
17:15 - 17:40	Insulated Membrane Kit for Emergency Shelters: product development and evaluation of three different concepts	Salvatore Viscuso (Politecnico di Milano, Department of Architecture, Italy)

Parallel Session B

16:25 - 16:50	Structural Membranes for Refurbishment of the Architectural Heritage	Josep Llorens (School of Architecture of Barcelona (ETSAB), Universitat Politècnica de Catalunya, Spain)
16:50 - 17:15	Unprecedented Structural Skins: experiments towards an intelligent tensegrity skin	Alberto Campesato (ACCED, The Netherlands)
17:15 - 17:40	Night Image of Tensile Facades	Beata Polomová (Department of Building Structures, Slovak University of Technology in Bratislava, Slovakia)
17:40 - 18:00	Closure	