



# **MEng Membrane Lightweight Structures**

Vienna University of Technology

Postgraduate MEng Program  
Master of Engineering (MEng)  
4 semesters, part-time

## FUTURE BUILDING TECHNOLOGY: MEMBRANE LIGHTWEIGHT STRUCTURES

The **postgraduate MEng program „Membrane Lightweight Structures“** prepares postgraduate students and professionals to work in the dynamic field of structural membrane design. The program offers a profound knowledge base and prepares the graduating students with invaluable competence and technical ability to work at any architecture or engineering office. This modular postgraduate program may also form a basis for further scientific qualification and pursuits.

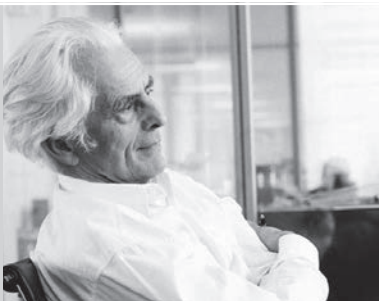
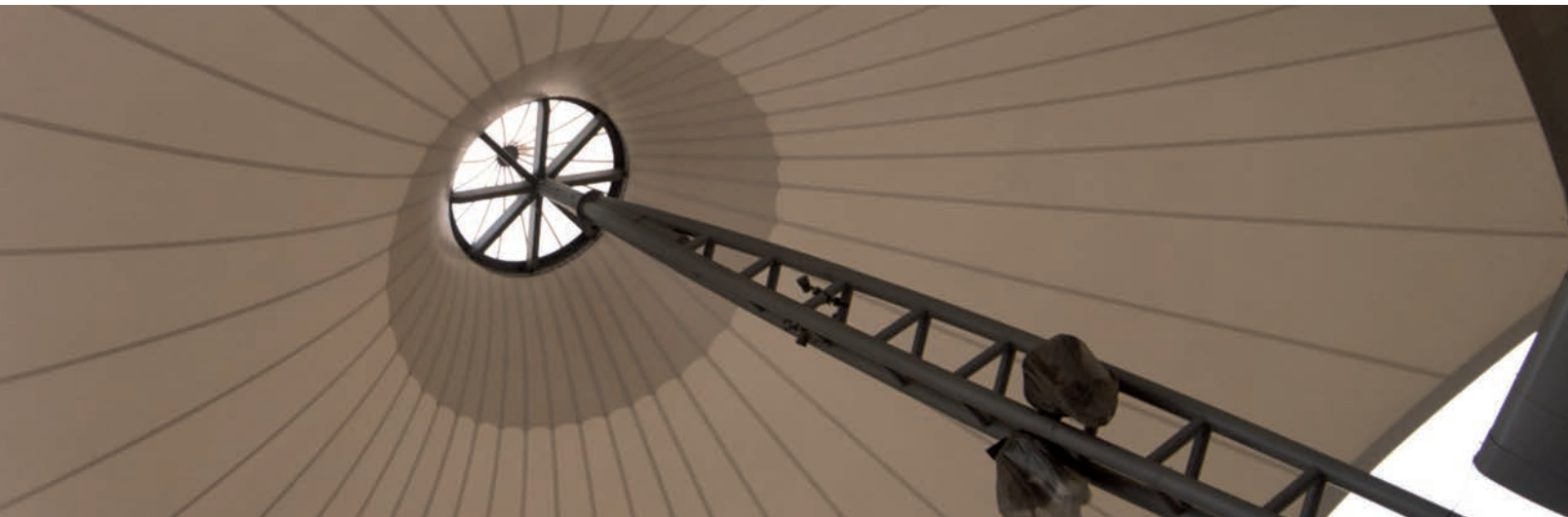
A substantial goal is to provide graduates with ample tools and an understanding of appropriate technologies in the field of structural fabric.

The individual modules are designed to accentuate the entire creative process from the first sketch up to the realization of membrane architecture. A major aim of the program is to prepare the graduates to develop projects independently. Participants will also have the opportunity to become part of a unique network of experts. The exchange of information and the long-term co-operation form the basis for a successful career in the field of fabric architecture.

## TECHNOLOGY FOR PEOPLE – DEVELOPING SCIENTIFIC EXCELLENCE AND ENHANCING COMPREHENSIVE COMPETENCE

The Vienna University of Technology – located in the heart of Vienna – is the largest Austrian institution in research and education within the areas of technology and natural sciences. Even though the beginnings of the TU Vienna reach back as far as 190 years research, teaching, and learning are state-of-the-art.

For years the Vienna University of Technology has been successfully offering outstanding Postgraduate Programs. This success is also based on the top scientific and economic qualifications of its faculty.



*„Immerse into essence and details! I think that the master program ‚Membrane Lightweight Structures‘ can really make a difference!“*

**Em.Prof. Dr.-Ing. Frei Otto**

Institute for Lightweight Structures and Conceptual Design, University of Stuttgart

## CURRICULUM

<b>Fundamentals</b>	History of Membrane Architecture • Context, Content & Concept of Architectural Space • Psychology & Sociology of Space
<b>Membrane Architecture &amp; Engineering</b>	Fundamentals of Membrane Forces and Structure • Engineering Concept of the Membrane Structure • Load Analysis & Dynamic • Materials and Properties • Workflow and Cost Estimation
<b>Software Tools for Membrane Structures</b>	Engineering & Analysis Software Tools • Software Tools for Designing a Membrane Structure
<b>Project Development of Membrane Structures</b>	Design Strategies & Visual Expression • Design project workshops, physical Models and Mock-ups • Building Technology and Climate Design
<b>Inspirational Membrane &amp; Experimental Design</b>	Experimental Design of Membrane Structures • Sustainability of Membrane Structures
<b>Knowledge Management</b>	Scientific Methods • Research on Membrane Structures (e.g. Interviews, Images, Literature) • Edit of Research Results • Publication of the Research in the Membrane Database
<b>Project Management</b>	Project Management (Commercial, Technical & Regulative Aspects) • Methods, Strategies, Team Leading & Building
<b>Master 's Thesis</b>	The MEng Program is concluded with a master's thesis that should enhance the participant's skills in the field of the subject according to scientific criteria. The thesis can be developed as a theoretical scientific work or as the completion of a prototype in connection with a scientific contribution.

Subject to modification.



*„Knowledge is the most powerful source of innovation. The ‚Membrane Lightweight Structures‘ Master Program will provide the most profound experts knowledge on architectural design and state of the art engineering expertise ranging from the analysis to workshop drawings for detailing and cutting patterning.“*

**Dipl.-Ing. Dr.techn. Robert Wehdorn-Roithmayr**

Program Coordinator  
Formfinder Software GmbH

### PROGRAM OBJECTIVES

Target, content and methodology of the **postgraduate MEng Program „Membrane Lightweight Structures“** aim at qualifying the participants to apply and enhance the scientific, artistic and technical knowledge and procedures in the field of building with membranes.

The term **„building with membranes“** describes architectural structures made from flexible, non-solid materials ranging from being used as a simple sail for shadowing to a stadium roof. In particular, new materials and fabrication technologies for textile façades will be dealt with.

### TARGET GROUP

The program is designed for individuals in companies and organizations, who have positioned themselves in the field of structural membrane, or who wish to do so in the future. A major target group is the individuals working in architects' and engineers' offices in the private sector or the public sector, who aim to enhance their professional career and prepare themselves for an interdisciplinary and innovative professional future. Graduate students in related disciplines are also of great value to this program.

### LANGUAGE OF INSTRUCTION

English

### ADMISSION REQUIREMENTS

Admitted individuals must either hold an appropriate first academic degree (e.g. all Austrian academic degrees, master or bachelor degree of a foreign university or university of applied sciences) or a similar qualification which can be regarded as an equivalent thereof (i.e. activities similar to those of a university graduate or relevant professional experience).

### FINAL DEGREE

The MEng Program is concluded by writing a master's thesis. Achievement of the final degree **“Master of Engineering” (MEng)** is granted by the Vienna University of Technology.

### DURATION

This part-time program is presented in blocked modules. It takes four semesters.

### FACULTY

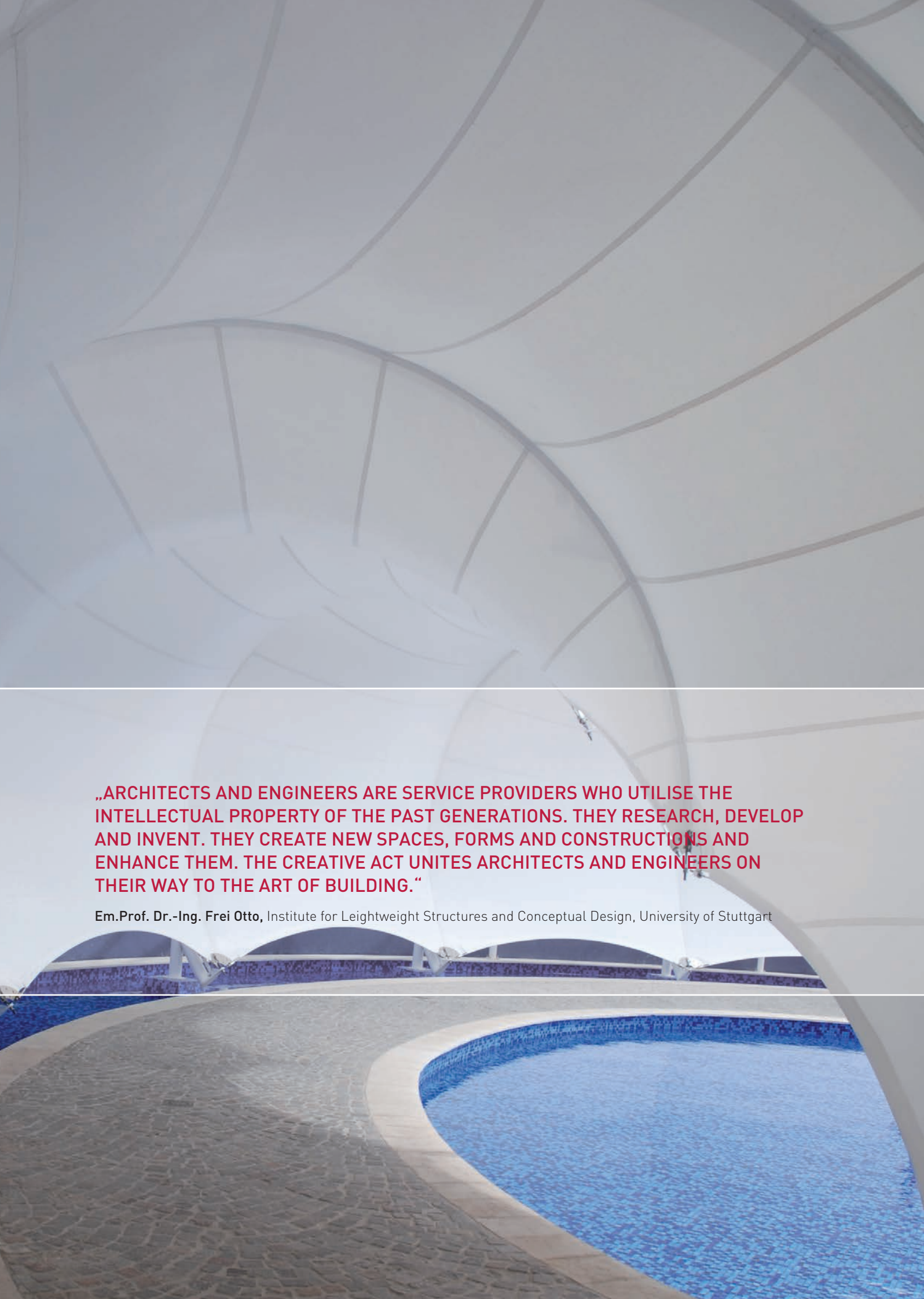
Internationally distinguished experts are members of this highly acclaimed faculty, either through their sound interdisciplinary scientific knowledge or their extensive practical experience in the field of structural membrane design.



*“The curriculum covers all the unique aspects of design, engineering, and construction related to this specific technology. The faculty and lecturers have extensive first-hand knowledge gained from the field. In fact (...) some of the teaching staff was there in the beginning with Frei Otto exploring and developing the foundations of membrane architecture (...). The program delves into this topic from both ends of the theoretical and its application of membrane architecture. ”*

**Les Taylor**

Einhorn Yaffee Prescott



**„ARCHITECTS AND ENGINEERS ARE SERVICE PROVIDERS WHO UTILISE THE INTELLECTUAL PROPERTY OF THE PAST GENERATIONS. THEY RESEARCH, DEVELOP AND INVENT. THEY CREATE NEW SPACES, FORMS AND CONSTRUCTIONS AND ENHANCE THEM. THE CREATIVE ACT UNITES ARCHITECTS AND ENGINEERS ON THEIR WAY TO THE ART OF BUILDING.“**

**Em.Prof. Dr.-Ing. Frei Otto**, Institute for Lightweight Structures and Conceptual Design, University of Stuttgart

MEng

# Membrane Lightweight Structures

Postgraduate MEng Program

Class 2013–2015

## PROGRAM START

November 21, 2013

## LOCATIONS

The MEng Program is held at the Vienna University of Technology.

## DURATION

This part-time program is presented in blocked seminars. The classes will start each day at 9.00 am and end at 7.00 pm. In addition, discussions, lectures and informal talks will be offered by guest speakers from the industry.

## TIME SCHEDULE

Unit 1		Unit 2		Unit 3		Unit 4		Unit 5		Unit 6	
Thu	Nov 21, 2013	Thu	Feb 20, 2014	Thu	Sep 11, 2014	Thu	Nov 13, 2014	Thu	Feb 05, 2015	Thu	Apr 30, 2015
Fri	Nov 22, 2013	Fri	Feb 21, 2014	Fri	Sep 12, 2014	Fri	Nov 14, 2014	Fri	Feb 06, 2015	Fri	May 01, 2015
Sat	Nov 23, 2013	Sat	Feb 22, 2014	Sat	Sep 13, 2014	Sat	Nov 15, 2014	Sat	Feb 07, 2015	Sat	May 02, 2015
Sun	Nov 24, 2013	Sun	Feb 23, 2014	Sun	Sep 14, 2014	Sun	Nov 16, 2014	Sun	Feb 08, 2015	Sun	May 03, 2015
Mon	Nov 25, 2013	Mon	Feb 24, 2014	Mon	Sep 15, 2014	Mon	Nov 17, 2014	Mon	Feb 09, 2015	Mon	May 04, 2015
Tue	Nov 26, 2013	Tue	Feb 25, 2014	Tue	Sep 16, 2014	Tue	Nov 18, 2014	Tue	Feb 10, 2015	Tue	May 05, 2015
Wed	Nov 27, 2013	Wed	Feb 26, 2014	Wed	Sep 17, 2014	Wed	Nov 19, 2014	Wed	Feb 11, 2015	Wed	May 06, 2015
Thu	Nov 28, 2013	Thu	Feb 27, 2014	Thu	Sep 18, 2014	Thu	Nov 20, 2014	Thu	Feb 12, 2015	Thu	May 07, 2015
Fri	Nov 29, 2013	Fri	Feb 28, 2014	Fri	Sep 19, 2014	Fri	Nov 21, 2014	Fri	Feb 13, 2015		
Sat	Nov 30, 2013	Sat	Mar 01, 2014	Sat	Sep 20, 2014	Sat	Nov 22, 2014	Sat	Feb 14, 2015		
										<b>Master's Thesis submission</b> September 2015	
										<b>Graduation</b> November 2015	

Subject to modification.



## TUITION FEE

**EUR 14.700,-** (excluding expenses for travelling and accomodation)

## INFO SESSIONS

Please contact us for your individual information session in Vienna.

## APPLICATION

### Application Deadline:

June 14, 2013

### Admission Interviews:

Admission interviews will take place after individual appointment.

Download of the application form and detailed information is available on the website:

<http://mls.tuwien.ac.at>

## FACULTY

Arch. Univ. Prof. Dr. **Martin Bechthold** Harvard University, Graduate School of Design (USA)

Dr.-Ing. habil. **Rainer Blum** Laboratorium Blum Stuttgart (Germany)

Mag.arch. **Sigrid Brell-Cokcan** Robots in Architecture

Dipl.-Ing. Dipl.-Ing. **Johannes Braumann**, BSc Robots in Architecture

Prof. Dr. Ing. **Jan Cremers** Hochschule für Technik Stuttgart (Germany)

Dipl.-Arch. ETH **Horst Dürr** IF Group (Germany)

**Vladimir Ermolov** Arch.Verteco (Russia)

Univ.Prof. Dr.-Ing. Dr.h.c. **Lothar Gründig** Technische Universität Berlin (Germany)

Arch. Dipl.-Ing. **Jürgen Hennicke** ILEK (Germany)

Ass.Prof. **Ali Heshmati**, BArch University of Minnesota (USA)

Arch. BA (Hons) **Alex Heslop** Architen Landrell (United Kingdom)

Dipl.Ing. **Jürgen Holl** technet GmbH (Germany)

Mag.arch. Dr.techn. **Barbara Imhof**, MSc Liquifer Systems Group

Dr. **Peter Kneen** Lightweight Structures Associaton of Australasia (Australia)

O.Univ.Prof. Dipl.-Ing. Dr.-Ing. **Johann Kollegger**, MEng Vienna University of Technology

Dipl.Ing. **Julian Lienhard** ITKE Stuttgart (Germany)

Dipl.-Ing. **Peter Resch** werkraum ZT GmbH

Arch. Dipl.-Ing. **Kristina Schinegger** Soma Architecture Vienna

Dipl.Ing. Dr.techn. **Alexander Schiffner** Evolute. The geometry experts Vienna

Dipl.-Ing. P. **Michael Schultes** experimonde

Prof. Arch. Dipl.-Ing. **Vinzenz Sedlak**, PhD University of New South Wales (Australia)

Dipl.-Ing. Dr.techn. **Michael Seidel** Vienna University of Technology

**Mauricio Soto** Building Technologies and Design at California College of the Arts

Univ.Prof. Arch. Dipl.-Ing. **Hannes Stiefel** State University of New York at Buffalo (USA)

Dr.-Ing. **Dieter Ströbel** technet GmbH (Germany)

Arch. Mag. Arch. **Silja Tillner** TW Architekten

Arch. Dipl.-Ing. Dr.techn. **Robert Wehdorn-Roithmayr** Formfinder Software GmbH

Dr. techn. **René Ziegler** Waagner-Biro

This represents a selection of the faculty. Subject to modification.

## FURTHER INFORMATION/CONTACT

### Vienna University of Technology

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### Formfinder

#### Software GmbH

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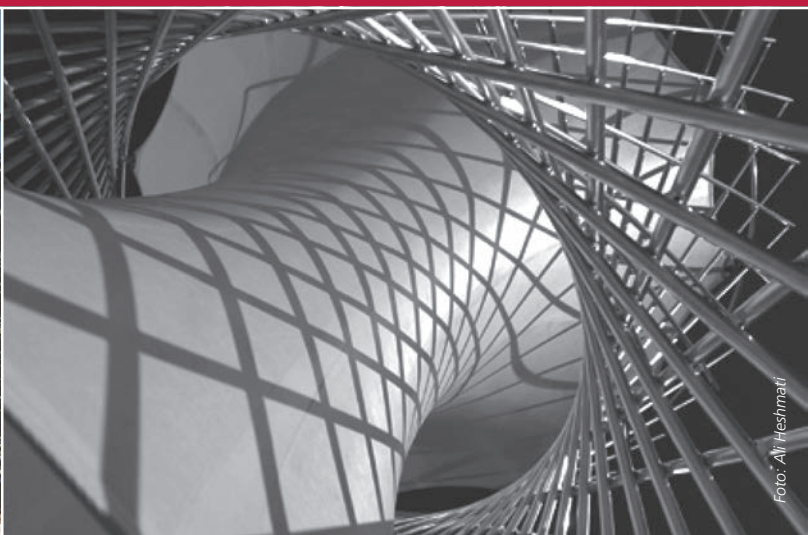


Foto: Alr Heshmati

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