



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 yourself in the essence and in the details! I think that a master program ‚Membrane Lightweight Structures‘ can really make a difference!“

Em.Prof. Dr.-Ing. Dr.h.c.A.A. Dr.sc.h.c. Frei Otto

Institute for Lightweight Structures and Conceptual Design, University of Stuttgart

CURRICULUM

Fundamentals	History of Membrane Architecture • Design Process – Context, Content & Concept • Psychologies & Sociologies of Space
Membrane Architecture & Engineering	Design Strategies for Membrane Lightweight Structures • Structural Design, Load Analysis & Dynamic I/II • Material Properties I/II • Detailing, Workshop Drawings
Software Tools for Membrane Structures	Designing & Formfinding • Engineering & Statical Analysis • Effects of Material Properties in Compensation & Cutting Patterning
Project Development of Membrane Structures	Interdisciplinary Construction Process Management • Cost Estimation • Guest Lectures, Reviewers, Critiques
Inspirational Membrane & Experimental Design	Experimental Design of Membrane Structures • Physical Models and Mock-Ups in 1:1 Scale • Sustainability of Membrane Structures
Knowledge Management	Scientific Methods • Data Acquisition (e.g. Interviews, Images, Literature) • Data Processing (Consolidation & Editing) • Project Report in Data Base
Project Management	Project Management (Commercial, Technical & Regulative Aspects) • Methods, Strategies, Team Leading & Building
Master 's Thesis	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.

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.

LANGUAGE OF INSTRUCTION

English

DURATION

This part-time program is presented in four units each lasting 12 days, plus one extra unit for the 1:1 scale building workshop (lasting 12 days). 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.




„Goal of the ‚Membrane Lightweight Structures‘ Master Program is joining the pioneering spirit of the early developments made by Frei Otto and his team with the now available future building technologies.“

Univ.Prof. Arch. Dipl.-Ing. Christoph Achammer


Academic Director

Vienna University of Technology



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

Em.Prof. Dr.-Ing. Dr.h.c.A.A. Dr.sc.h.c. Frei Otto, Institute for Lightweight Structures and Conceptual Design,
University of Stuttgart



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

Univ.Prof. Dipl.-Ing. **Christoph Achammer**

Vienna University of Technology

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

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

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

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

Dipl.-Ing. **Swen Gamon** Outdoorpartners

Dipl.-Ing. **Klaus Gebhard** ATP Innsbruck Planungs GmbH

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

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

Arch. BA (Hons) **Alex Heslop** Head of design and development Architen Landrell (United Kingdom)

Mag.arch. Mag.rer.soc.oec. **Waltraut Hoheneder** Liqueifer Systems Group

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

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

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

Arch. Univ.Prof. Dr. **Ami Korren** Technion – Israeli Institute of Technology (Israel)

Dipl.-Ing. Dr.techn. **Peter Mandl** Peter Mandl ZT GmbH

Arch. RAIV Dr.-Ing. **Lars Meeß-Olsohn** Leichtbaukunst (Germany)

Univ.Prof. Dipl.-Psych. Dr.phil.nat. **Riklef Rambow** Karlsruher Institut für Technologie (KIT, Germany)

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

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

Arch. Dipl.-Ing. **Bernhard Sommer** University of Applied Arts Vienna

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. Mag.art. **Michael Wallraff** Architect

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

Subject to modification.

FURTHER INFORMATION/CONTACT

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Status: March 2010



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