



WORKSHOP

WATER-GLASS FACADES: CONSTRUCTION ASPECTS, STRUCTURAL AND ENERGY PERFORMANCE OF INCORPORATED FLUID-GLASS HYBRIDS

SUMMARY

The workshop introduces the water-glass facade system, an innovation developed and patented by Dr Matyas Gutai. Water-glass systems are hybrid structures that are built utilizing glass and water infill, which improves the structural and energy performance of the system compared to standard solid glass systems. The most important novelty of the structure is its capacity to absorb and distribute energy on the glass surface and throughout the building, which provides automated cooling and offers substantial energy savings. These unique properties were tested on two experimental pavilion buildings designed and built by Matyas in Taiwan and Hungary, which are the first Water House buildings of their kind with continuous fluid-solid building envelope that covers the whole building.

The workshop is divided in two parts. The first part introduces the system, offers a comparison with standard glass structures and presents the design guidelines for water-glass facades. The second part guides the audience through the steps of the design process, which includes a simplified calculation method to evaluate energy savings with water-glass structure for any project.

The workshop is recommended for design professionals, constructors and manufacturers interested in glass innovations, new technologies, sustainable buildings and structures.

KEY POINTS

- Impact of water-glass technology
- Design guidelines for water-glass facades
- Introduction of water-glass experimental buildings: Water House 1.0 and Water House 2.0
- Structural, construction and manufacturing aspects of water-glass
- Discussion of thermal performance, energy savings and indoor comfort of water-glass



GLASS PERFORMANCE DAYS 2019 JUNE 26-28, TAMPERE FINLAND



TIMETABLE 26TH OF JUNE

- 09.00 Seating of participants, introduction of speaker
- 09.10 What is a water-glass facade and how does it work
- 09.50 Short break for questions (tea/coffee)
- 10.00 Constructing water-glass facades and water houses: introduction through built examples and details
- 10.40 Long break for questions (tea/coffee/snacks)
- 11.10 A discussion of water-glass thermal and mechanical performance
- 11.50 Short break for questions (tea/coffee)
- 12.00 Future of water-glass: potential applications and future developments, introducing Smart Water-Glass (SWG)
- 12.40 Closing remarks and final questions from participants
- 13.00 End of the workshop

Duration: 4 hours

ORGANISER



MATYAS GUTAI, UNIVERSITY OF LOUGHBOROUGH, SCHOOL OF ARCHITECTURE, BUILDING AND CIVIL ENGINEERING

Dr Matyas Gutai is an academic and practicing architect specializing in sustainable architecture and hybrid building materials like water-glass and fluid-solid building envelopes (Water House). His experimental buildings and patented innovation explore how hybrid material innovations can lead to new opportunities in architectural engineering and design. Matyas' research field focuses on Hybrid Architecture, a construction system that can disseminate mass and heat within the structure to create an energy-efficient network system on scale of facades, buildings, city blocks or neighborhoods.