



TIMBER ENGINEERING WORKSHOP:

Innovations in Structural Timber Design & Construction

Instructors:

Dr. J. Natterer (Polyscope, Switzerland)
Prof. M. Flach (Univ. of Innsbruck, Austria)
Mr. P. Fast (Fast +Epp, Canada)

Dates:

Wednesday September 20, 2017 08:00-17:30

Location:

The Westin Bayshore Hotel & Conference Center
1601 Bayshore Drive, Vancouver, BC

Outline:

The course presents principles and recent advances in heavy timber engineering, including conceptual design, good detailing for durability and structural performance. It will use recently built examples to demonstrate innovations in the field and discuss current trends in timber engineering and construction.

The workshop will be led by engineers with extensive experience in the design of timber buildings and timber bridges and will offer participants both European and North American design perspectives on structural timber. Main discussion topics will include conceptual timber design strategies, timber concrete composites, connection designs, durability considerations, and recent trends.

Detailed Outline:

Time	Topic	Lecturer	Detailed Description
08.00 - 08.30	Registration		
08.30 - 08.40	Introduction	Natterer	Introduction
08.40 - 09.15	Conceptual Timber Design (Part 1)	Fast	<p>Understanding the project vision and where timber can best be utilized is key to a successful conceptual design.</p> <p>In Part 1 of this opening session, Paul will show examples of timber structural systems, and review design strategies.</p> <p>The following topics will be addressed:</p> <ul style="list-style-type: none"> • Timber sustainability comparisons • Architectural expression • Hybrid structures • Going taller with timber • Importing and exporting timber fibre • Implications for long span conditions • Implications for large floor plates • Cost comparison with other materials • Future applications
09.15 - 09.50	Conceptual Timber Design (Part 2)	Flach	<p>In Part 2 of this opening seminar, Michael will continue to demonstrate a methodical approach in how to design wide span structures in timber.</p> <p>The following topics will be addressed:</p> <ul style="list-style-type: none"> • boundary conditions and requirements for wide span roof structures • development of primary, secondary systems and stabilisation • design approach biaxial and spatial structural systems • Projects of trusses, tree structures, shells and latest developments
09.50 - 10.00	Conceptual Timber Design (Part 3)	All	Commonalities and differences between North American and European timber construction.
10.00 - 10.30	Coffee Break		
10.30 - 11.15	Timber Concrete Composites	Natterer	<p>In the last 30 years, timber-concrete composite construction has become a standard in multi-story and bridge construction. The timber-concrete composite structure is the answer for better acoustic, vibration and fire resistance.</p> <p>After a brief theoretical introduction about the connectors and semi-rigid theory, Johannes will show built examples and discuss the cost implications of such systems. Johannes will explain how timber concrete composites have become a highly cost-competitive alternative in Europe over the last 25 years.</p>
11.15 - 12.00	Good Connection Design	Flach	<p>Connections are key to good timber design; multi-storey buildings require new systematic connection products. His department is developing scientifically innovative connection details with most of the European connection manufacturer et distributors.</p> <p>In this session, Michael will demonstrate how connections can be efficient, aesthetically pleasing, and durable. Connection design strategies and examples will be reviewed.</p>

12.00 – 13.00		Lunch	
13.00 – 13.45	Detailing for Durability	Natterer	Durability in timber design is often over-looked. With good structural detailing - the timber aesthetic and structural longevity can be increased. In this session, Johannes will review several ways to protect timber by way of good structural detailing. He will address strategies for dealing with timber in hot climates, humid environments, extreme cold, as well as wet/rainy environments.
13.45 – 14.30	Recent Trends in Europe	Flach / Natterer	Timber design trends are often more progressive in Europe when compared to North America. In part 1 Michael will review sustainable town development to tackle the climate change as well in the field of energy efficiency as well as in the field of refurbishment. He will also provide an overview of recent European demonstration projects of the European smart city project.
14.30 – 15.00		Coffee Break	
15.00 – 15.45	Recent Trends in North America	Fast	In Part 2 of this session, Paul will address recent trends in North American timber design, including a review of wood usage in non-traditional building sectors such as transportation infrastructure, and the role of pre-fabrication in contemporary building culture. Recent applications of CLT, GLT, NLT and DLT mass timber products, as well as procurement of such products across international boundaries will also be discussed.
15.45 – 16.15	Open Discussion	All	All presenters will be available for questions and open discussion.
16.15 – 16.30	Closing Remarks	Natterer	Closeout

** Draft schedule. All times and topics subject to change*