

REGISTRATION

COST PARTICIPANTS

For registration eligible FP1004 COST Participants need to complete the file "COST-Registration.doc" that can be downloaded on the section events in the website www.unitn.it and send it back to:

roberto.tomasi@unitn.it and FP1004GrantHolder@Bath.ac.uk

Registration for the course should be made not later than:

February 15th, 2014

NON-COST PARTICIPANTS

For registration NON-COST FP1004 Participants need to complete the file "NON-COST-Registration.doc" that can be downloaded on the section events in the website www.unitn.it and send it back to:

roberto.tomasi@unitn.it

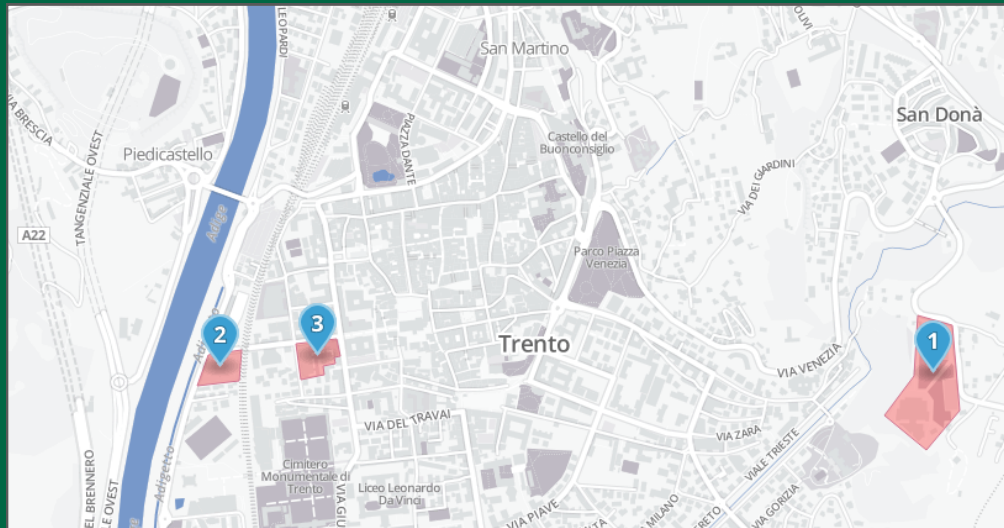
Participation fee € 400

Registration for the course should be made not later than:

February 15th, 2014

Participation includes the course documentation, buffet and coffee break during the course and the social dinner.

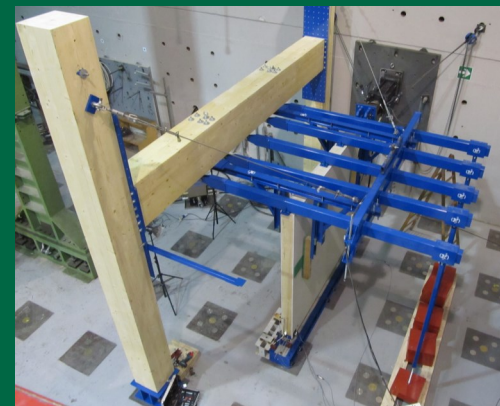
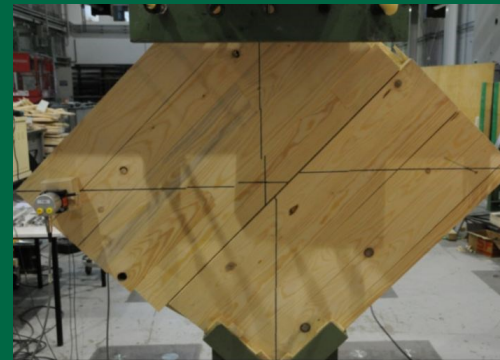
- 1 - April 15th, 2014 | Via Mesiano, 77 - 38123 Trento
Department of Civil, Environmental and Mechanical Engineering
- 2 - April 16th, 2014 | Via Roberto da Sanseverino - 38122 Trento
Piazzale S. Severino
- 3 - April 17th, 2014 | Via Inama, 5 - 38122 Trento
Department of Economics and Management



CLT TRAINING COURSE

Structural design of Cross Laminated Timber (CLT)

In the frame of
COST Action FP1004



Nome	h (m)	l (m)	b (m)	W (kN)	T (kN)	P (kN)	Instabilità	Compressione	Trasversale	Trasversale	Compressione	Compressione
Plano 1	9.33	-11.58	-1.15	-0.37	0.00	0.88	18.02%	11.79%	-0.14%	0.00%	0.00%	
Plano 2	9.78	-11.65	-1.00	-0.34	0.00	0.88	25.16%	11.84%	-0.17%	-0.05%	0.00%	

Website: <http://www.unitn.it/dicam/evento/33372/clt-training-course-2014>

April 15th to 17th 2014, Trento, Italy

Content and Objective

Cross-Laminated-Timber (CLT) is the generic term for a class of engineered wood plate products suitable for applications like wall and floor slabs in multi-storey buildings. It consists of three or more layers of finger-jointed structural grade lumber, with layer thicknesses ranging from 12 mm to 45 mm, arranged orthogonal to pieces in other layers, so that when layers are glued together using rigid adhesives the composite arrangement is cross-reinforced, offering several structural advantages when subjected by both in-plane and out-of plane forces. This product was first developed in Europe in the mid-1990s, where a key role was played by TU Graz in an industry-academia research effort which put the basis of the present CLT product.

The use of CLT panels in buildings has rapidly increased over the last years in Europe, with about 500,000 m³ produced in 2012 mainly in Germany and in Austria. The current product regulation is based on European Technical Approval, while a production standard for CLT manufactured in Europe is under development within the CEN Technical Committee 124 (prEN16351).

CLT represents nowadays one of the most efficient wood engineered products available as an alternative to concrete or masonry buildings. The use of engineered wood products like CLT produces enormous technological benefits thanks to the high level of industrialization, prefabrication and erection process, besides the possibility to reduce the carbon footprint and the environmental impact of construction industry. The huge potentialities of the use of CLT in seismic prone areas have been investigated in various research projects where earthquake input were applied to real shake

specimens (e.g. Sofie Project coordinated and conducted by the CNR-IVALSA, and more recently a sequence of four real scale shake table tests within the framework of the FP7 Series Project coordinated by University of Trento).

The goal of the CLT training course organized by FP1004 Cost Action is to cover the different aspects of the structural design of CLT, from the basic structural components to the behavior of complex multistorey buildings. The intensive three days course will be held in Trento the third week of April 2014, and will comprise lectures, laboratory demonstrations and visit to companies. All lectures and other presentations are given in English. The speakers are among the most prominent expert in the fields of production and design of CLT, and are invited by COST FP1004.

Host

University of Trento, Italy, Department of Civil, Environmental and Mechanical Engineering.



Sponsorship



Program

Day 1- CTL MATERIALS PRODUCTS AND CALCULATION

1. State of the art of the CLT product
2. Material properties, test configuration and certification
3. In-plane and out-of-plane behavior of CLT elements
4. Connections techniques
5. Visit to the Laboratory for CLT testing
6. Social dinner

Day 2 - TECHNICAL VISIT TO CLT COMPANIES

1. Typical connection products for CLT
2. CLT production technique and visit to the factories

Day 3 - CLT DESIGN AND PROJECTS

1. General introduction with special regard to timber structures in seismic zones
2. Modelling of CLT multi-storey buildings subjected to dynamical seismic actions
3. Fire Design: standard and practice
4. Verification on CLT elements under lateral and vertical force
5. Design example of a CLT building in seismic zone
6. CLT Projects - Case study

Speakers

R. Brandner, G. Schickhofer, A. Thiel, A. Ringhofer
Institute of Timber Engineering and Wood Technology, TUGraz Holz.bau Forschungs GmbH

R. Tomasi, T. Sartori, D. Casagrande, M. Piazza
DICAM, University of Trento

M. Andreolli
Timber Tech srl

B. Dujic
CBD d.o.o. - Contemporary Building Design Company

Participants

Recommended basis for the course is an academic degree in civil engineering or building technology. General knowledge about solid mechanics, structural engineering including basic knowledge about design of timber structures is required. The course should be of interest to:

- Ph.D. students, graduate students, academics and researchers in structural engineering and architecture,
- Practicing structural engineers and architects with interests to specialize in timber structures.