



Enhance mechanical properties of timber, engineered wood products & timber structures

COST Action FP1004

30/05/2011

30/06/2015



Chair: Prof Richard Harris (The University of Bath, GB)

Vice chair: Prof Robert Kliger (Chalmers University of Technology, SE)



Dan Ridley-Ellis

- Edinburgh Napier University, GB
- Mechanical properties of timber
- Extent and sources of variation
 - Silviculture and environment
 - Processing
- Timber grading
 - CEN TC124 WG2 and TG1



FP1004 : Context

- Timber as a material
 - Variability and natural defects
 - Size of pieces available
 - Lower stiffness
 - Low strength perp. to grain
 - Fracture and energy dissipation
 - Lower shear strength



FP1004 : Context

- Improving construction
 - Desire for ‘better’ big construction
 - Desire to use lower grade timber
 - ...and lesser species
 - Desire to use modified wood



FP1004 : Examples

- Bridges
- Long span roofs
- Multi-storey buildings





FP1004 : Overview

- Connections and weak zones
- Strengthening, stiffening, toughening
- Describing the state-of-the-art
- Developing new techniques
- Modelling performance
- Improving design (pre-code work)





FP1004 : Examples

- Embedding self-tapping screws
- Embedding steel or fibre composite rods
- Inserting or laminating densified wood or engineered wood products
- Ductility through steel connectors



FP1004 : Examples

- Cross-laminated timber
- Stress lamination and pre-tensioning
- Timber-concrete composite structures
- Repair...





cost
FP1101

ASSESSMENT, REINFORCEMENT AND
MONITORING OF TIMBER STRUCTURES

- Chair: Dr Dina D'Ayala (UCL, GB)
- WG1 Assessment
 - Dr. Mariapaola Riggio (University of Trento, IT)
- WG2 Reinforcement
 - Dr. Annette Harte (NUI Galway, IE)
- WG3 Monitoring
 - Dr. Jochen Kurz (Fraunhofer IZFP, DE)



FP1004 Parties

- 26 Cost countries
 - **Austria**, **Belgium**, **Bulgaria**, **Croatia**, **Cyprus**, Czech Republic, **Denmark**, **Finland**, **France**, fYR Macedonia, **Germany**, **Greece**, Hungary, **Ireland**, Italy, Lithuania, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, **Sweden**, Switzerland, Turkey, United Kingdom
- 3 international partner countries
 - Australia, Canada, New Zealand



WG1 “Connections”

- Lead: Prof Jan-Willem van de Kuilen
(Technical University of Munich, DE)
- Wrocław Conference
- WG meeting in Munich (BIROD)
- Follow up to CIB-W18





WG2 “Heavy structures”

- Lead: Prof Roberto Crocetti (Lund University, SE)
- Cross-Laminated Timber (Graz)
- Bridges (Biel, September 2014)



WG3 “Modelling”

- Lead: Dr Dan Ridley-Ellis
(Edinburgh Napier University, GB)
- WG1 and WG2
- Modelling
- Identifying and measuring properties
- Workshop 24 September 2014, Biel



Synergies with FP1303

- Response to moisture
 - Movement, change in properties
- Durability
 - Modifications and treatments that compromise mechanical properties
 - Effects of decay on mechanical properties (Also FP1101)



Past conferences

- Zagreb 19-20 April 2012 (ESRs)
- Wrocław 18-19 October 2012
(connections, joint with FP1101)
- Graz 21-22 May 2013 (CLT)
- Nicosia 17-18 October 2013



Upcoming conference

- Experimental research
- ESRs
- 21-23 May 2014
- Prague, Czech Republic
- (Abstract deadline has passed)





Upcoming conference

- Bridges
- 24-26 September 2014
- 24th workshop for WG3 (analysis)
- Biel, Switzerland
- Conjunction with FP1101





Training School

- Structural design of Cross Laminated Timber (CLT)
- 15-17 April 2014
- University of Trento, Italy
- <http://www.unitn.it/dicam/evento/33372/clt-training-course-2014>
- Registration before 15 February



Training School

- Self tapping screws & bonded rods (?)
- Repair and upgrade
- FP1101 but joint with FP1004
- December 2014 (4 days)
- NUI Galway, Ireland



Training School

- Self tapping screws & bonded rods (?)
- New build (and different manufacturers)
- FP1004
- Spring 2015 (or maybe Sept 2014)
- Switzerland



After the Action?

- Hardwoods?
- Discussion...

