



Basis of Structural Timber Design  
from Research to Standards



# **COST Action FP1402 “Basis of Structural Timber Design from Research to Standards”**

**Working Group 1**  
**“Basis of Design”**  
**Member fact sheets**



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**Prof. Dr. Jochen Köhler - WG1 Leader (Norway)**

Norwegian University of Science and Technology  
Trondheim, Norway

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Vice Chairman COST FP1402, MC Member, WG1 leader



<i>Personal</i>	<i>Organisation</i>		
Years of experience in relevant field: 15 Expertise: Basic of Design, Structural Reliability, Timber Engineering Degree: PhD. (1.6.2006)	Institute of Structural Engineering ( <a href="http://www.ntnu.edu/kt">http://www.ntnu.edu/kt</a> ) Focus: theoretical and practical research / innovation and education / training) Facilities: fully equipped testing lab, climate chambers, parallel computer, library		
	No. of staff	PhD students	MSc/year
	10	7	30
<i>Research projects</i>			
WoodWisdom Project: Durable Timber Bridges / Contact: K.A. Malo (5 PhD) WoodWisdom Project: TallFacades / Contact: J.Kohler (1PhD) Phd Project on Reliability Based Code Calibration / Contact: J.Kohler			
<i>Publications</i>			
Fink, Gerhard; Köhler, Jochen. (2014) Model for the prediction of the tensile strength and tensile stiffness of knot clusters within structural timber. European Journal of Wood and Wood Products. vol. 72 (3). Köhler, Jochen; Brandner, Reinhard; Thiel, Alexandra B.; Schickhofer, Gerhard. (2013) Probabilistic characterisation of the length effect for parallel to the grain tensile strength of Central European spruce. Engineering structures. vol. 56. Köhler J. and Svensson S. (2010). Probabilistic representation of duration of load effects in timber structures. Engineering Structures, Volume 33, Issue 2, February 2011, Pages 462-467. Köhler J., Sørensen J.D. and Faber M.H. (2006). Probabilistic modelling of timber structures. Journal of Structural Safety, Volume 29 (4), pp. 255-267. Labonnote, Nathalie; Rønquist, Anders; Malo, Kjell Arne. (2014) Prediction of material damping in timber floors, and subsequent evaluation of structural damping. Materials and Structures. Angst, Vanessa; Malo, Kjell Arne. (2013) Moisture-induced stresses in glulam cross sections during wetting exposures. Wood Science and Technology. vol. 47 (2). Malo, Kjell Arne; Siem, Jan Helge; Ellingsbø, Pål. (2011) Quantifying ductility in timber structures. Engineering structures. vol. 33 (11). Bell, Kolbein. (2014) Design of timber structures in a digital world. WCTE 2014, World Conference on Timber Engineering; Book of abstracts, Volume II. Bell, Kolbein. (2011) Shear failure in glulam frames - An actual case. Assessment of Failures and Malfunctions - Guidelines for Quality Control.			

**Dr. Gerhard Fink – WG1 Vice leader (Finland)**

Aalto University, School of Engineering, Department of Civil Engineering  
Espoo, Finland

[gerhard.fink\(at\)aalto.fi](mailto:gerhard.fink(at)aalto.fi)

COST FP1402, MC Substitute, WG1 Vice Leader

*Personal*

Years of experience in relevant field: 6  
Expertise: Mechanical properties of solid timber and GLT, probabilistic modelling of GLT, strength grading, quality control, test methods, code calibration, Bayes updating, risk analysis  
Degree: PhD (24.03.2014)

*Organisation*

Aalto University, School of Engineering,  
Department of Civil Engineering  
([www.aalto.fi](http://www.aalto.fi))  
Focus: theoretical and practical research/innovation, education/training  
Facilities: Testing lab with strong floor, several universal testing machines, hydraulic jacks of different capacities

No. of staff	PhD students	MSc/year
3	2	2

*Research projects*

## WG 2 - Solid Timber Construction:

- Earthquake-resistant timber system for multi-storey buildings. 4 years. 4 persons.
- Assessment of the residual load-carrying capacity of large span glulam members with cracks. 2 years. 3 person.
- Homogenous and combind glulam made from beech wood - Technical basis for the market implementation as building product used for beams and columns. 3 years. 4 persons.

## WG 3 - Connections:

- Enhancement of compression perp. to grain strength of glulam with pin-shaped fasteners. 2 years. 3 persons.
- Structural behaviour of glued laminated timber beams with unreinforced and reinforced nothces. 4 years. 3 persons.

## WG 4 - Hybrid Structures:

- CLT-concrete composite slab lacking of any rebar and metallic shear connectors. 1.5 years, 3 persons.

*Publications*

## WG 1 - Basis of Design:

Kohler, J. & Fink, G. 2015. Aspects of code based design of timber structures, Accepted for publication at ICASP Applications of Statistics and Probability in Civil Engineering, Vancouver, Canada.

Köhler J., Steiger R., Fink G., Jockwer R. 2012: Assessment of selected Eurocode based design equations in regard to structural reliability. Proceedings of CIB-W18 Meeting 45, Växjö, Sweden, August 27 – 30, 2012. Paper 45-102-1.

## WG 2 - Solid Timber Construction:

Theiler M., Frangi A., Steiger R. 2013: Strain-based calculation model for centrally and eccentrically loaded timber columns. Engineering Structures 56: 1103 – 1116.

Steiger R., Gehri E. 2011: Interaction of shear stresses and stresses perpendicular to the grain. Proceedings of CIB-W18 Meeting 44, Alghero, Sardegna (Italy), August 28 – September 1, 2011. Paper 44-6-2.

Steiger R., Arnold A. 2009: Strength grading of Norway spruce structural timber: Revisiting property relationships used in EN 338 classification system. Wood Science and Technology 43 (3-4): 259 – 278.

Steiger R., Fontana M. 2005: Bending moment and axial force interacting on solid timber beams. Materials and Structures 38 (279): 507 – 513.

## WG 3 - Connections:

Tlustochowicz G., Serrano E., Steiger R. 2011: State-of-the-art review on timber connections with glued-in steel rods. Materials and Structures 44 (5): 997 – 1020.

**Dr. José-Ramón Aira (Spain)**

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COST FP1402, WG1 Member



<i>Personal</i>	<i>Organisation</i>		
Years of experience in relevant field: 7 Expertise: FEM analysis of joints in timber structures Degree: PhD (13.09.2013)	Forest and Environmental Engineering and Management ( <a href="http://www.montes.upm.es">www.montes.upm.es</a> ) Focus: theoretical and practical research / innovation, design of structures, execution of structures and education/training. Facilities: Portable devices for non-destructive testing		
	No. of staff	PhD students	MSc/year
	150	15	18
<i>Research projects</i>			
- Non-destructive techniques for grading of timber structures in new and rehabilitated buildings. 3 years. Timber Construction Research Group. <a href="http://www2.montes.upm.es/Dptos/DptoConstruccion/cestruct">www2.montes.upm.es/Dptos/DptoConstruccion/cestruct</a> .			
<i>Publications</i>			
- Baño V., Arriaga F., Soilán A. and Guaita M. (2011). Prediction of bending load capacity of timber beams by finite element method simulation of knots and grain deviation. DOI: 10.1016/j.biosystemseng.2011.05.008. - Arriaga F., Íñiguez-González G. and Esteban M. (2011). Bonding shear strength in timber and GFRP glued with epoxy adhesives. Wood Research, 56(3):2011, 297-310. - Fernandez-Cabo J.L., Arriaga F., Majano-Majano A., Íñiguez-González G. (2012). Short-term performance of the HSB® shear plate-type connector for timber-concrete composite beams. DOI:10.1016/j.conbuildmat.2011.12.035. - Baño V., Arriaga F. and Guaita M. (2013). Determination of the influence of size and position of knots on load capacity and stress distribution in timber beams of Pinus sylvestris using finite element model. DOI: 0.1016/j.biosystemseng.2012.12.010. - Arriaga F., Íñiguez-Gonzalez G., Esteban M. and Fernandez-Cabo J.L. (2013). Simplified model for the strength assessment of timber beams joined by bonded plates. DOI: 10.1061/MT.1943-5533.0000660. - Aira J.R., Arriaga F., Íñiguez-González G., Crespo J. (2014). Static and kinetic friction coefficients of Scots pine (Pinus sylvestris L.), parallel and perpendicular to grain direction. DOI: 10.3989/mc.2014.03913. - Aira J.R., Arriaga F., Íñiguez-González G. (2014). Determination of the elastic constants of Scots pine (Pinus sylvestris L.) wood by means of compression tests. DOI: 10.1016/j.biosystemseng.2014.07.008. - Aira J.R., Descamps T., Van Parys L., and Léoskool L. (2015). Study of stress distribution and stress concentration factor in notched wood pieces. DOI 10.1007/s00107-015-0891-3.			

**Prof. Dr. Toni Arangelovski (fYR Macedonia)**

University "Ss.Cyril and Methodius", Faculty of Civil Engineering  
Skopje, R.Macedonia  
arangelovskitoni(at)gf.ukim.edu.mk  
COST FP1402, MC Member, WG1 Member



<i>Personal</i>	<i>Organisation</i>		
Years of experience in relevant field: 12 Expertise: design and assesment of new and exsisting timber structures Degree: PhD (12.07.2010)	Chair of Concrete and Timber Structures ( <a href="http://www.gf.ukim.edu.mk">www.gf.ukim.edu.mk</a> ) Focus: theoretical research / innovation, design of structures Facilities: Testing basic properties of timber, real scale testing of structural timber elements		
	No. of staff	PhD students	MSc/year
	5	1	8
<i>Research projects</i>			
No current funded research project due to the lack of funding by the government.			
<i>Publications</i>			
None			

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COST FP1402, WG1 Member



<i>Personal</i>	<i>Organisation</i>		
Years of experience in relevant field: 20 Expertise: Computational mechanics, computer programming, timber engineering education and teaching Degree: Dr.-Ing. (16.11.1968)	Department of structural engineering ( <a href="http://www.ntnu.no/kt">http://www.ntnu.no/kt</a> ) Focus: theoretical and practical research / innovation and education / training Facilities: Testing lab, climate chamber, parallel computer, library		
	No. of staff	PhD students	MSc/year
	10	7	30

*Research projects*

WoodWisdom Project: Durable Timber Bridges / Contact: K.A. Malo (5 PhD)  
WoodWisdom Project: TallFacades / Contact: J.Kohler (1PhD)  
Phd Project on Reliability Based Code Calibration / Contact: J.Kohler

*Publications*

Fink, Gerhard; Kohler, Jochen. (2014) Model for the prediction of the tensile strength and tensile stiffness of knot clusters within structural timber. European Journal of Wood and Wood Products. vol. 72 (3).

Köhler, Jochen; Brandner, Reinhard; Thiel, Alexandra B.; Schickhofer, Gerhard. (2013) Probabilistic characterisation of the length effect for parallel to the grain tensile strength of Central European spruce. Engineering structures. vol. 56.

Köhler J. and Svensson S. (2010). Probabilistic representation of duration of load effects in timber structures. Engineering Structures, Volume 33, Issue 2, February 2011, Pages 462-467.

Köhler J., Sørensen J.D. and Faber M.H. (2006). Probabilistic modelling of timber structures. Journal of Structural Safety, Volume 29 (4), pp. 255-267.

Labonnote, Nathalie; Rønnquist, Anders; Malo, Kjell Arne. (2014) Prediction of material damping in timber floors, and subsequent evaluation of structural damping. Materials and Structures.

Angst, Vanessa; Malo, Kjell Arne. (2013) Moisture-induced stresses in glulam cross sections during wetting exposures. Wood Science and Technology. vol. 47 (2).

Malo, Kjell Arne; Siem, Jan Helge; Ellingsbø, Pål. (2011) Quantifying ductility in timber structures. Engineering structures. vol. 33 (11).

Bell, Kolbein. (2014) Design of timber structures in a digital world. WCTE 2014, World Conference on Timber Engineering; Book of abstracts, Volume II.

Bell, Kolbein. (2011) Shear failure in glulam frames - An actual case. Assessment of Failures and Malfunctions - Guidelines for Quality Control.

**Prof. Dr. Francois Colling (Germany)**

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Augsburg Germany

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COST FP1402, WG1 Member



<i>Personal</i>		<i>Organisation</i>		
Years of experience in relevant field: 35 Expertise: Timber engineering, basis of design, glued laminated and cross laminated timber, connections etc Degree: Professor (01.09.2015)	Institut für Holzbau (IfH) - Institute for timber engineering ( <a href="http://www.ifh-augsburg.de">www.ifh-augsburg.de</a> ) Focus: theoretical and practical research / innovation and education / training Facilities: testing lab			
	No. of staff	PhD students	MSc/year	
	2	0	20	
<i>Research projects</i>				
Bedö, S. 2014: Bearing capacity of cross laminated timber. Thesis.				
<i>Publications</i>				
Colling, F. 2015: Creep of CLT in service class 2. European Journal of wood and wood products 2015 (in preparation).				
Colling, F. 2014: Holzbau - Grundlagen und Bemessung nach EC 5. 4. Auflage, Springer-Verlag.				
Colling, F. 2014: Holzbau - Beispiele. 4. Auflage, Springer-Verlag.				
Colling, F. 2011: Aussteifung von Gebäuden in Holztafelbauart. Ingenieurbüro für Holzbau, Karlsruhe.				
Colling, F. since 2008: Holzbau: part in Schneider Bautabellen für Ingenieure.				



**Prof. Artur Feio (Portugal)**

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Lissabon, Portugal

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COST FP1402, MC Substitute Member, WG1 Member



<i>Personal</i>	<i>Organisation</i>		
Years of experience in relevant field: 14 Expertise: Develops, since 2001, investigation in the fields of sustainability of materials and construction systems, wood structures, structural rehabilitation of wood structures, NDT tests on wood structures and modelling of structural wood-wood connections. Degree: PhD. (01.03.2006)	Architectural and Civil Eng. Department ( <a href="http://www.fam.ulusiada.pt">www.fam.ulusiada.pt</a> ) Focus: theoretical and practical research / innovation and education / training Facilities: Regular Testing Lab.		
	No. of staff	PhD students	MSc/year
	5	3	22
<i>Research projects</i>			
SFRH/BD/73853/2002 - Inspection and Diagnosis of Historical Timber Structures: NDT Correlations and Structural Behaviour.			
POCI/ECM/56552/2004 (2005-2008). Influence of the joint stiffness in the static and dynamic behaviour of timber structures: consequences of different strengthening techniques.			
<i>Publications</i>			
Artur O. Feio; Paulo B. Lourenço; José S. Machado. Testing, NDT and modeling of a traditional timber mortise and tenon joint. <i>Materials and Structures, RILEM, Volume 47, Issue 1-2, pages 213-225 January 2014.</i>			
Artur O. Feio; Paulo B. Lourenço; José S. Machado. Non-Destructive Evaluation of the Mechanical Behavior of Chestnut Wood in Tension and Compression Parallel to Grain. <i>International Journal of Architectural Heritage, Volume 1, Issue 3 July 2007, pages 272 – 292.</i>			
Paulo B. Lourenço; Artur O. Feio; José S. Machado. Chestnut wood in compression perpendicular to the grain: Non-destructive correlations for test results in new and old wood. <i>Construction and Building Materials, Volume 21, Issue 8, August 2007, Pages 1617-1627, ISSN 0950-0618.</i>			
Feio, A.; Lourenço, P.B.; Machado, J. Capacity of a Traditional Timber Mortise and Tenon Joint. <i>Structural Analysis of Historic Construction: Preserving Safety and Significance. Proceedings of the 6th International Conference on Structural Analysis of Historic Construction, SAHC08, pp. 833-841. Taylor &amp; Francis Group, London, ISBN 978-0-415-46872-5, July 2008.</i>			

**Dr. Eva Frühwald-Hansson (Sweden)**

Lund university  
Lund, Sweden

[eva.fruhwald\(at\)kstr.lth.se](mailto:eva.fruhwald@kstr.lth.se)

COST FP1402, MC Substitute Member, WG1 Member

<i>Personal</i>	<i>Organisation</i>		
Years of experience in relevant field: 10 Expertise: safety of timber structures, durability and service life prediction of timber Degree: PhD (01.06.2007)	Division of Structural Engineering ( <a href="http://www.kstr.lth.se">www.kstr.lth.se</a> ) Focus: theoretical and practical research / innovation and education /training Facilities: testing lab for mechanical tests, vibration/acoustics testing, climate chambers etc.		
	No. of staff	PhD students	MSc/year
	5	5	10

*Research projects*

## WG1 (Basis of Design):

- Risk management and service life design of timber constructions (start 2013, ongoing; PhD-student)
- Instability and Bracing of Slender Steel and Timber Structures (start 2012, ongoing; PhD-student)
- Conceptual design of structural systems - minimizing risks and uncertainties in the modern design process (start 2012, ongoing; PhD-student)
- WOODBUILD: Service life and performance of exterior wood above ground and wood in the building envelope (2008-2012, several senior researchers)
- Serviceability Design of Structures and Structural System (2009-2014, PhD-student)
- Survey and analysis of failures in timber structures (2005-2007, several senior researchers)

## WG2 (CLT):

- some MSc-theses

## WG3 (Connections):

- several MSc-theses, a guest researcher

## WG4 (Hybrid Timber Structures):

- some MSc-theses and smaller senior researchers projects

*Publications*

## WG1 (Basis of Design):

- Honfi, 2013: Design for Serviceability - A probabilistic approach, PhD-Thesis
- Honfi, Mårtensson, Thelandersson, 2012: Reliability of beams according to Eurocodes in serviceability limit state, Engineering Structures 35, p 48-54
- Frühwald, Serrano, Toratti, Emilsson, Thelandersson, 2007: Design of Safe Timber Structures - How Can we Learn from Structural Failures in Concrete, Steel and Timber? Report
- Thelandersson, Isaksson, Frühwald, Suttie, 2011: Service life of wood in outdoor above ground applications - engineering design guideline, Report
- Fröderberg, 2014; The human factor in structural engineering: A source of uncertainty and reduced structural safety, Licenciate thesis

## WG4 (Hybrid timber structures)

- Crocetti, Sartori, Tomasi, Cabo, 2014: An innovative prefabricated timber-concrete composite system, Materials and Joints in Timber Structures, Vol 9, p 507-516
- Costa, 2011: Timber concrete composite floors with prefabricated fiber reinforced concrete, MSc-thesis

**Mr. Matthias Gerold (Germany)**

Harrer Ingenieure

Karlsruhe Germany

[m.gerold\(at\)harrer-ing.net](mailto:m.gerold@harrer-ing.net)

COST FP1402, WG1 Member

*Personal*

Years of experience in relevant field: 25  
 Expertise: Planning of structural framework, structurally engineered check, technical expert of all materials and for all kind of constructions

Degree: Dipl.-Ing. (03.09.1985)

*Organisation*

Building construction ([www.harrer-ing.net](http://www.harrer-ing.net))  
 Focus: practical research / innovation, design of structures, execution of structures and education / training  
 Facilities: Structural Design and Civil Engineering, Bridge Construction and Foundation Engineering, Industrial Facility, Overall Plan and Project Management, Risk Management

No. of staff	PhD students	MSc/year
45	1	4

*Research projects*

WG 1 and 3:

1) DIN EN 1995 – Eurocode 5 Timber Structures – application testing, 2009-2010, Dipl.-Ing. Matthias Gerold, Dipl.-Ing. Marion Kleiber, Dipl.-Ing. Thomas Di Risio (all Harrer Ingenieure, Karlsruhe), Dipl.-Ing. Joachim Sauter (Holzbau Stephan, Gaildorf), Prof. Dr.-Ing. Josef Trabert (Ingenieurbüro Trabert + Partner, Geisa), no webpage

2) DIN EN 1998 – Eurocode 8 Earthquake – application testing, 2010-2011, Dipl.-Ing. Matthias Gerold, Dipl.-Ing. Marion Kleiber, Dr.-Ing. Sascha Schnepf (all Harrer Ingenieure, Karlsruhe) - part Timber Structures, Dr.-Ing. Werner Röser (H + P Ingenieure GmbH & Co. KG, Aachen) - part Concrete Structures, Dr.-Ing. Markus Hauer (Büro für Baukonstruktionen GmbH, Karlsruhe) - part Masonry Structures, Dr.-Ing. Heribert Spitz (Ingenieurgesellschaft für Tragwerksplanung mbH, Euskirchen) - part Composite Structures, Dr.-Ing. Ralf Egnér (Ingenieurgruppe Bauen, Freiburg) - part Steel Structures, no webpage

WG 4:

1) Deformation measurements of edge-glued timber concrete composite floor, 2000, GEROLD, M.; KUHLMANN, U.; Di RISIO, T.; SULZBERGER, L.; SCHÄNZLIN, J., no webpage

2) Numerical studies on the feasibility study of timber concrete composite ceilings with LIGNATUR, 2005 KUHLMANN, U.; GEROLD, M.; MICHELFELDER, B.

*Publications*

WG 1 and 3:

1) GEROLD, M.; KLEIBER, M. 2012

Design of timber structures of the future - in Bauen mit Holz, magazine 3 - 5, page 42 – 44, 40 - 34, 34 - 36

2) KLEIBER, M.; GEROLD, M.; SCHNEPF, S. 2013/2014

Seismic design of timber structures to EC8 - in Bauen mit Holz, magazine 11 + 12 (2013), page 23-27, S. 35-39, magazine 1 (2014), page 24-28

WG 4:

1) KUHLMANN, U.; GEROLD, M.; SCHÄNZLIN, J. 2000

edge-glued timber concrete composite - Consideration of creep and shrinkage- in Bauingenieur 75 (2000), magazine 6, page 281 – 288

2) KUHLMANN, U.; GEROLD, M.; SCHÄNZLIN, J. 2001

Carrying and deformation behavior of edge-glued timber concrete composite- in Bauingenieur 76 (2001), magazine 12, page 281 - 288

3) GEROLD, M.; SCHÄNZLIN, J.; KUHLMANN, U. 2003

Material timber as an ideal partner for the Composite - in Bautechnik 80 (2003), magazine 11, page 840 - 845

**Dr. Sotir Gluschkov (Bulgaria)**

Forest Research Institute  
Sofia, Bulgaria

[sotirgluschkov\(at\)abv.bg](mailto:sotirgluschkov(at)abv.bg)

COST FP1402, MC Substitute Member, WG1 Member

<i>Personal</i>	<i>Organisation</i>		
Years of experience in relevant field: 3 Expertise: hand and machined milled log homes, modelling, log constructions, wooden bridges Degree: PhD. (26.11.2009)	Silviculture and Management of Forest Resources ( <a href="http://www.bas.bg/fribas/?page_id=257">http://www.bas.bg/fribas/?page_id=257</a> ) Focus: theoretical and practical research / innovation, design of structures and education / training Facilities: testing labs, workshop		
	No. of staff	PhD students	MSc/year
	3	-	-
<i>Research projects</i>			
Creation and implementation of technology and machinery for manufacturing of wooden houses from round wood in Bulgaria - 3 person involved, we started 1 year ago.			
<i>Publications</i>			
Gluschkov S., I. Markov, V. Tchakarov, Sv. Madjov 2014 Technology and machinery for manufacture of wooden houses from round wood on Bulgaria – I st. Conference: Performance and maintenance of bio-based building materials – Cost Action FP1303 - First Conference Krasnaq Gora, Slovenia p. 41 – 43			

**Dr. Ergün Güntekin (Turkey)**

Suleyman Demirel University

Isparta Turkey

[ergunguntekin\(at\)sdu.edu.tr](mailto:ergunguntekin(at)sdu.edu.tr)

COST FP1402, MC Member, WG1 Member

*Personal*

Years of experience in relevant field: -

Expertise: wood mechanics

Degree: PhD (15.05.2002)

*Organisation*

Suleyman Demirel University, Department of Forest Products Engineering

(www.sdu.edu.tr)

Focus: education/training

Facilities : wood testing lab

No. of staff	PhD students	MSc/year
2	2	2

*Research projects*

Orthotropic mechanical behavior of some important wood species grown in Turkey, 3 years, Güntekin, E. Aydın, T.Y. and Niemz, P.

Orthotropic elastic properties of black pine and scotch pine, 3 years, Güntekin, E.

*Publications*

Güntekin, E. 2007. Bending Moment Capacity of MPC Wood-Splice Joints Constructed with Red Pine (Pinus brutia Ten.) Lumber. Tubitak Journal of Agriculture and Forestry. 31 (2007): 207-212.

Güntekin, E. 2009. Performance Of Turkish Calabrian Pine (Pinus Brutia Ten.) Timber Joints Constructed With Metal Plate Connectors. Wood Research: 54(3):99-108

Güntekin, E. Emiroglu, Z.G., and Yılmaz T. 2013. Prediction of Bending Properties for Turkish Red Pine (Pinus brutia Ten.) Lumber using Stress Wave Method. BioResources, 8(1):231-237

Güntekin, E. Ozkan, S. Yılmaz, T. 2014. Prediction of bending properties for beech lumber using stress wave method. Maderas. Ciencia y tecnología. 16(1):93-98.

**Dr. Georg Hochreiner (Austria)**

Vienna University of Technology  
Vienna, Austria

[georg.hochreiner\(at\)tuwien.ac.at](mailto:georg.hochreiner@tuwien.ac.at)

COST FP1402, MC Member, WG1 Member

*Personal*

Years of experience in relevant field: 25  
Expertise: Timber engineering / innovative design  
Structural modelling in the context of commercial structural software (connectors, CLT, GL, ..)  
Background for several generations of design standards for timber structures  
Degree: Dr. techn. (25.8.2014)

*Organisation*

Institute for Mechanics of Materials and Structures ([www.imws.tuwien.ac.at](http://www.imws.tuwien.ac.at))  
Focus: theoretical and practical research / innovation, design of structures, education / training and expert assessment.  
Facilities: high performance computation facilities and mechanical testing facilities (including uniaxial and triaxial testing machines for up to 250 kN; full-field deformation measurement system)

No. of staff	PhD students	MSc/year
6	3	15

*Research projects*

Mechwood-1 (2011-2015)

"Characterization of Wood Products and Connections - From Mechanical Modeling to Engineering Applications"

FFG-Project in cooperation with the Association of the Austrian Wood Industries

Mechwood-2 (2007-2010)

"Mechanical characterization of wood for knowledge-based timber industry"

FFG-Project in cooperation with the Association of the Austrian Wood Industries

*Publications*

for WG1: Probabilistic

G. Kandler, J. Füssl, J. Eberhardsteiner: "Stochastic finite element approaches for wood-based products – theoretical framework and review of methods"; Wood Science and Technology (2015), accepted.

G. Kandler, J. Füssl, E. Serrano, J. Eberhardsteiner: "Influence of stiffness variation in timber boards on effective stiffness of GLT beams"; Wood Science and Technology (2015), accepted.

**Dr. Daniel Honfi (Hungary)**

SP Technical Research Institute of Sweden  
 Göteborg Sweden  
[daniel.honfi\(at\)sp.se](mailto:daniel.honfi(at)sp.se)  
 COST FP1402, MC Member, WG1 Member



<i>Personal</i>	<i>Organisation</i>		
Years of experience in relevant field: 7 Expertise: code calibration, structural reliability, serviceability, modelling of mechano-sorptive creep Degree: PhD (23.01.2014)	SP Technical Research Institute of Sweden, Structural and Solid Mechanics (www.sp.se) Focus: practical research / innovation Facilities: structural laboratory		
	No. of staff	PhD students	MSc/year
	20	-	-

*Research projects*

Cluster Wooden Bridges, 2013-2014, A. Gustafsson, A. Pousette  
 DuraTB – Durable Timber Bridges, 2014-17, A. Pousette  
 Tall Timber Facades - Identification of Cost-effective and Resilient Envelopes for Wood Constructions, 2014-17, K. Sandberg  
 Service life and performance of exterior wood above ground (WoodExter), 2007-2011, J. Jermer  
 Harmonization of building regulations in the Nordic countries for wooden houses, 2007-2008, A. Gustafsson, A. Pousette

*Publications*

Honfi, D., A. Mårtensson, S. Thelandersson and R. Kliger (2014). "Modelling of Bending Creep of Low- and High-Temperature-Dried Spruce Timber." *Wood Science and Technology* 48(1): 23-36.

Olsson, A., J. Oscarsson, E. Serrano, B. Källsner, M. Johansson, and B. Enquist (2013). "Prediction of Timber Bending Strength and in-Member Cross-Sectional Stiffness Variation on the Basis of Local Wood Fibre Orientation." *European Journal of Wood and Wood Products* 71(3), 319-33.

Björngrim, N., A. Gustafsson, A. Pousette and O. Hagman (2011). "Health monitoring of a cable-stayed timber footbridge", *International Conference on Structural Health Monitoring of Timber Structures*, Lisbon, Portugal.

Viitanen, H, T. Toratti, L. Makkonen, S. Thelandersson, T. Isaksson, E. Früwald, J. Jermer, F. Englund and E. Suttie (2011). "Modelling of service life and durability of wooden structure. *Proceedings NSB 2011, 9th Nordic Symposium on Building Physics*, Tampere, Finland.

Gustafsson, A., A. Pousette and N. Björngrim (2010) "Health monitoring of timber bridges", *International Conference on Timber Bridges (ICTB)*, Lillehammer, Norway

Serrano, E. and P. J. Gustafsson (2006). "Fracture Mechanics in Timber Engineering – Strength Analyses of Components and Joints." *Materials and Structures* 40(1): 87-96..

**Associate Prof. Dr. Bilgin Icel (Turkey)**

Canakkale 18 Mart University

Isparta Turkey

Bilginicel(at)comu.edu.tr

COST FP1402, MC Member, WG1 Member



<i>Personal</i>		<i>Organisation</i>		
Years of experience in relevant field: 20 Expertise: Wood mechanics, non-destructive testing, modelling Degree: PhD (27.05.2004)		Wood mechanics and technology (-) Focus: practical research/innovation, design of structures and education, training. Facilities: Wood mechanics lab, Resistograph, Fractometer, IR Cameras		
		No. of staff	PhD students	MSc/year
		5	3	15
<i>Research projects</i>				
<ul style="list-style-type: none"> <li>-Estimation of Density and some mechanical properties of heat treated lumbers by drilling resistance method (Resistograph) and statistical modelling (accepted in 2015 – duration : 2 years-Bilgin Icel as project leader)</li> <li>-The use of timber and wood composites in light wood –framed houses (finished in 2004-Bilgin Icel as researchers)</li> <li>-Effects of different silvicultural treatment on timber properties of Pinus brutia (finished-Bilgin Icel as project leader)</li> </ul>				
<i>Publications</i>				
<ul style="list-style-type: none"> <li>-The effects of thinning treatments on density, MOE, MOR and crushing strength of Pinus brutia Ten. Wood, Annals of Forest Sci. 64(4):467-475, 2007</li> <li>-Estimation of Pinus brutia wood density from FTIR bands by ANN (artificial neural network), Sci. Res. And Essays 1765-17699, 2010</li> <li>-Physical and mechanical properties of European Hophornbeam wood, Bioresources Tech. 4780-4785, 2008</li> </ul>				



**Mr. Tiago Ilharco (Portugal)**

NCREP - Consultancy on Rehabilitation of Built Heritage Ltd.  
Porto, Portugal

[tiago.ilharco\(at\)ncrep.pt](mailto:tiago.ilharco(at)ncrep.pt)

COST FP1402, WG1 Member

*Personal*

Years of experience in relevant field: 10  
Expertise: Assessment, non destructive testing and structural analysis of old timber structures  
Structural and Seismic strengthening of existent buildings  
Degree: MSc (2008)

*Organisation*

- ([www.ncrep.pt](http://www.ncrep.pt))  
Focus: practical research / innovation, design of structures and education/training.  
Facilities: Our company has a protocol with 2 labs: Laboratory of Seismic and Structural Engineering of the Faculty of Engineering of Porto University; Laboratory of Structures of the School of Engineering of the Polytechnic of Porto.

No. of staff	PhD students	MSc/year
7	3	-

*Research projects*

NCREP - Consultancy on Rehabilitation of Built Heritage, Ltd. is an office that provides consultancy, monitoring, safety evaluation and design in the field of rehabilitation of constructions, namely regarding old and new timber structures. The office was born from the knowledge and experience gathered at the Faculty of Engineering of Porto University (FEUP) for many years on structural retrofitting / strengthening projects.

In its approach to rehabilitation, NCREP follows an integrated methodology that starts from the search of the detailed knowledge of the constructions through inspection and diagnosis, followed by analysis using safety assessment tools (commercial and research software) that, all together, allow defining the intervention procedures that better fit the construction actual characteristics and physical state, as well as code demands. The whole process is developed according to the most recent international recommendations concerning the intervention on built heritage, and it aims enhancing an equilibrium between functionality, safety and safeguard through minimum impact interventions. This integrated methodology can involve laboratorial and on-site tests, numerical simulations and monitoring before, during and after the implementation of the intervention solutions.

The experience of the NCREP team involves also laboratory and in-situ experimental testing of large structures and retrofitting / strengthening techniques, as well as the use and enhancement of Non-Destructive and Slightly-Destructive Techniques (NDT and SDT, respectively), namely sonic, ultra-sonic, resistance drilling machines, etc., for in-situ assessment of the mechanical characteristics of structural elements.

In the scope of the development of the structural projects regarding the rehabilitation and strengthening of old timber structures and the design of new timber structures, the generality of the topics of the COST Action FP1402 are covered by NCREP. Among these projects, structural and seismic analysis of old buildings, and particularly of old timber structures, in the city centres of Lisbon and Porto are the most common. Recently NCREP was also involved in a World Bank project regarding the structural analysis of the traditional constructions of Bhutan.

NCREP is also involved in COST Action FP1101, by its partner Tiago Ilharco, which is a member of WG1-TG2 of that COST Action. Tiago Ilharco was also present in some events of COST Action 1004.

*Publications*

- Ilharco, T., Guedes, J., Costa, A., Arêde, A. "Avaliação experimental de pavimentos antigos de madeira através de ensaios de carga". Construção Magazine. Vol.45. Pág. 34-38. 2011.
- Ilharco, T., Costa, A.A., Lopes, V., Costa, A., Guedes, J. "Assessment and intervention on the timber structure of a XVII century building in Lisbon; an example of seismic retrofitting". Revista Portuguesa de Engenharia de Estruturas (RPEE). Series II, Vol. 11. Pág. 26-37. 2012.
- Ilharco, T., Guedes, J., Costa, A., Arêde, A., Paupério, E. "Avaliação da distribuição de carga em pavimentos de madeira através de ensaios in situ". Revista da Associação Portuguesa de Análise Experimental de Tensões. Vol.21. Pág. 1-11., 2012.
- Costa, A., Arêde, A., Paupério, E., Guedes, J., Costa, A.A., Silva, B., Neves, F., Ilharco, T., Lopes, V. "Metodologia Integrada de análise de estruturas existentes. A experiência do NCREP". Anuário do Património 2012. Pág. 200-205. 2012.
- Paupério, E., Guedes, J., Lopes, V., Ilharco, T., Costa, A., Romão, X. "The "abuse" on portoghese built heritage – Portugal". Unsustainable Living. Recovery and Reintegration of Degraded Environments. Alinea Editrice. Pág. 110-118. 2012.

**Dr. Alan Just (Estonia)**

Tallinn University of Technology

Tallinn, Estonia

[alar.just\(at\)gmail.com](mailto:alar.just(at)gmail.com)

COST FP1402 MC Member, WG1 Member

*Personal*

Years of experience in relevant field: 17  
 Expertise: Design and testing of timber structures; fire design models of timber structures

Degree: PhD. (18.10.2010)

*Organisation*

Department of structural design  
 (<http://www.ttu.ee/faculty-of-civil-engineering>)  
 Focus: theoretical and practical research / innovation and education / training  
 Facilities: Testing lab for structures and building physics

No. of staff	PhD students	MSc/year
3	4	4

*Research projects*

Connections of CLT structures.  
 Ongoing from 2013.  
 Eero Tuhkanen, Joosep Mölder

*Publications*

Tuhkanen, E.; Öiger, K (2013). The behavior of toothed-plate connectors under reversed cyclic loading. In: Structures and Architecture: Concepts, Applications and Challenges: Second International Conference on Structures and Architecture - ICSA 2013, 24.-26.juuli 2013, Guimarães, Portugal. (Eds.) Paulo J.S. Cruz. Taylor & Francis, 2248 - 2254.

Mölder, J. Determination of embedment strength values for dowel type fasteners in GLT and CLT with different layups. Master thesis of Estonian University of Life Sciences. June 2015.

Supervisor: Eero Tuhkanen

Öiger, K.; Just, E.; Just, A. (2001). Experimental and Theoretical Analysis of Reinforced Glulam Beams. IABSE Conference, Lahti 2001, Innovative Wooden structures and Bridges, Aug. 29-31, 2001, Lahti, Finland. , (IABSE Reports), 343 - 348.

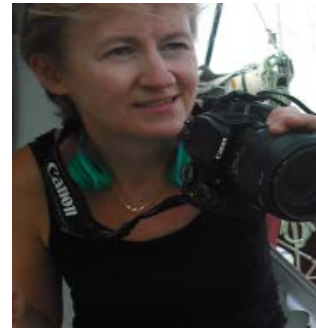
**Ms. Ewa Ingeborga Kotwica (Poland)**

BUD-LOGISTIK

Mierzyn, Poland

[ewainga\(at\)members.pl](mailto:ewainga@members.pl)

COST FP1402, MC Member, WG1 Member

*Personal*

Years of experience in relevant field: 18  
 Expertise: Execution of timber structures, design consultancy, training (design, montage, certification), approval procedures, standardization. Laboratory, I'm cooperating to (SPPD): research and modelling of structural plates made of timber and engineered timber products.

Degree: MSc (17.11.1995)

*Organisation*BUD-LOGISTIK; Wood Based Panels Producers Association of Poland (<http://sppd.pl/>)

Focus: practical research /innovation, education/ training and examination of existing structures

Facilities: SPPD - accredited lab, connections testing (out of accreditation)

No. of staff	PhD students	MSc/year
-	-	-

*Research projects*

1. Kotwica E.I. Trainings Certification of timber and wood products, RCIITT, ZUT 2006-2010
2. Kotwica E.I E-learning training, Timber structures - requirements and basic of design and execution; homepage of Polish Association of Civil Engineers, 2012-
3. SPPD: „ECOinterACOUSTIC Baffle – ecological, modular systems of sound barriers. 2007-2013. (5-6 people involved)
4. SPPD: „Development of technology of processing and recovery of environmentally harmful packaging waste for building materials and consumer products”. 2008. (5-6 people involved)

*Publications*

1. Kotwica Ewa Ingeborga, Nożyński Władysław, Konstrukcje drewniane - przykłady obliczeń (handbook: Timber structures - design examples), SPPD, Szczecin 2015
2. Kotwica Ewa, Krzosek Sławomir, Analyses of comparison old and new strength classes of structural timber basing on visual grading. Annals of Warsaw University of Life Sciences - SGGW, Warsaw 2014
3. Kotwica Ewa, Krzosek Sławomir, Technical requirements and practical guide for sawn timber and glulam applications in wooden constructions, Annals of Warsaw University of Life Sciences - SGGW, Warsaw 2014;
4. Kotwica E., Orłowicz R., Gil Z.; Konstrukcje z drewna klejonego – analiza przyczyn awarii i katastrof. Inżynier Budownictwa 05.2011;
5. Szyperska B, Kotwica E. I., Przestrzeganie wymagań w zakresie projektowania i wykonawstwa konstrukcji drewnianych, VII Konferencja Naukowa Drewno i materiały drewnopochodne w konstrukcjach budowlanych, Szczecin – Międzyzdroje 2006,
6. Hikiert M. A., Mrozek M., Orlikowski D., Rodzeń. K., Opracowanie technologii i zaprojektowanie, wykonanie i przebadanie kilku wariantów prefabrykowanej konstrukcyjnej belki stropowo-dachowej z materiałów drewnopochodnych. OB-RPPD nr 253.1441.3.00, 2000.06.30. (SPPD)
7. Hikiert M. A. Material and Energy use of Wood, Innovawood Poznań 2007 (SPPD)

**Dr. Miha Kramar (Slovenia)**

Slovenian National Building and Civil Engineering Institute  
Ljubljana, Slovenia

[miha.kramar\(at\)zag.si](mailto:miha.kramar@zag.si)

COST FP1402, MC Substitute, WG1 Member



<i>Personal</i>	<i>Organisation</i>		
Years of experience in relevant field: 3 Expertise: Assessment of the load-carrying capacity of existing building structures, laboratory tests of structures and structural elements, modelling of different types of timber structures and elements (timber frame structures, CLT), seismic risk assessment Degree: PhD. (11.07.2008)	Section for Metal, Timber and Polymer Structures ( <a href="http://www.zag.si">http://www.zag.si</a> ) Focus: practical research /innovation Facilities: Modular equipment for performing tests of building structures and their elements under static or dynamic loadings (max. length: 30 m, max. load: 6000 kN), onedirectional shaking table (2 m x 3.2 m), Zwick 250 kN, Resistograph IML PD500, Brookhuis Timber Grader MTG		
	No. of staff	PhD students	MSc/year
	10	0	0
<i>Research projects</i>			
National projects: 1.) L2-2214: Strength grading of timber structural elements 2.) J2-6749: Seismic behaviour of multi-storey shear walls with openings 3.) J2-5461: Design of structures for tolerable seismic risk using non-linear methods of analysis 4.) Z2-3659: Seismic resistance of modern masonry structures 5.) V2-0469: Technical-economic analysis of energy retrofitting of residential buildings COST actions: 1.) COST Action E53: »Quality Control for Wood and Wood Products«, 2006-2010 2.) COST Action FP1404: »Fire safe use of bio-based building products«, 2014-2019 3.) COST Action FP1004: »Enhance mechanical properties of timber, engineered wood products and timber structures«, 2010-2015 4.) COST Action FP1101: »Assessment, Reinforcement and Monitoring of Timber Structures« 2010-2015			
<i>Publications</i>			
1.) PAZLAR, Tomaž, KRAMAR, Miha. Traditional timber structures in extreme weather conditions. International Journal of Architectural Heritage: Conservation, Analysis, and Restoration. 2015. 2.) SEIM, Werner, KRAMAR, Miha, PAZLAR, Tomaž, VOGT, Tobias. OSB and GFB as Sheathing Materials for Timber-Framed Shear Walls: Comparative Study of Seismic Resistance. ASCE Journal of Structural Engineering, Special issue on Seismic Resistant Timber Structures, 2015 (accepted for publication). 3.) LUTMAN, Marjana, ŠKET MOTNIKAR, Barbara, WEISS, Polona, KLEMENC, Iztok, ZUPANČIČ, Polona, CERK, Matej, JERAJ, Julij, BANOVEC, Primož. Aspects of earthquake risk management in Slovenia. Accepted for 4th International Conference on Building Resilience, 8-10 September 2014 4.) TOMAŽEVIČ, Miha, GAMS, Matija. Shaking table study and modelling of seismic behaviour of confined AAC masonry buildings. Bulletin of earthquake engineering, Jun 2012, vol. 10, issue 3, 863-893. 5.) LUTMAN, Marjana. Seismic resistance assessment of heritage masonry buildings in Ljubljana. International journal of architectural heritage, ISSN 1558-3058. [Print ed.], Jul. 2010, vol. 4, iss. 3, pp. 198-221.			

**Prof. Dr. Frank Lam (Canada)**

University of British Columbia  
 Vancouver BC, Canada

[frank.lam\(at\)ubc.ca](mailto:frank.lam@ubc.ca)

COST FP1402, IPC Member, MC Observer, WG1 Member



<i>Personal</i>		<i>Organisation</i>		
Years of experience in relevant field: 30 Expertise: Modeling of engineered wood products and systems		Wood Science ( <a href="http://team.forestry.ubc.ca/">http://team.forestry.ubc.ca/</a> ) Focus: theoretical and practical research /innovation, education /training Facilities: IAS Accrediated Structural test laboratory		
Degree: PhD. (27.11.1992)		No. of staff	PhD students	MSc/year
		10	5	2
<i>Research projects</i>				
Strategic Network on Innovative Wood Products and Building Systems 2010-2015 Performance of connections in heavy timber construction 2011-2014 Performance of Canadian Glulam 2009-2012 Reliability of Timber Structural System under Seismic Loading 2007-2012				
<i>Publications</i>				
Li Z., M. He, M. Li, F. Lam (2014) Damage assessment and performance-based seismic design of timber-steel hybrid shear wall systems. Earthquakes and Structures. 7(1):101-118. Chen Y., F. Lam. (2013). Bending performance of box based cross laminated timber systems. Journal of Structural Engineering. ASCE. 139(12) 04013006-1-12. Li M., F. Lam, B.J. Yeh, T. Skaggs, D. Rammer, J. Wacker. (2012). Modeling force transfer around openings in wood-frame shear walls. Journal of Structural Engineering. ASCE. 138(12):1419-1426. Song X., F. Lam. (2012). Stability analysis of metal-plate-connected wood truss assemblies. Journal of Structural Engineering. ASCE. 138(9):1110-1119				

**Dr. Svetozar Madzhov (Bulgaria)**

Forest Research Institute

Sofia, Bulgaria

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COST FP1402, MC Member, WG1 Member

<i>Personal</i>	<i>Organisation</i>		
Years of experience in relevant field: 3 Expertise: hand and machined milled log homes, modelling, log constructions, wooden bridges Degree: PhD. (29.1.2007)	Silviculture and Management of Forest Resources ( <a href="http://www.bas.bg/fribas/?page_id=257">http://www.bas.bg/fribas/?page_id=257</a> ) Focus: theoretical and practical research / innovation, design of structures and education / training Facilities: testing labs, workshop		
	No. of staff	PhD students	MSc/year
	3	-	-
<i>Research projects</i>			
Creation and implementation of technology and machinery for manufacturing of wooden houses from round wood in Bulgaria - 3 person involved, we started 1 year ago.			
<i>Publications</i>			
Glushkov S., I. Markov, V. Tchakarov, Sv. Madjov 2014 Technology and machinery for manufacture of wooden houses from round wood on Bulgaria – I st. Conference: Performance and maintenance of bio-based building materials – Cost Action FP1303 - First Conference Krasnaq Gora, Slovenia p. 41 – 43			

**Mr. Julian Marcroft (United Kingdom)**

Mitek  
Hampshire, United Kingdom  
[jmarcroft\(at\)mitek.co.uk](mailto:jmarcroft(at)mitek.co.uk)  
COST FP1402, MC Member, WG1 Member



<i>Personal</i>	<i>Organisation</i>		
Years of experience in relevant field: 25 Expertise: Timber engineering consultant mainly undertaking applied research for industry. Main areas of interest are development of timber design codes, wall diaphragm design, panel products, serviceability of floors and connection design (including nailplates). Degree: BSc in Civil Engineering, 1 <sup>st</sup> class (20.06.1981)	None - small consultancy office ( <a href="http://www.marcrofttimberconsultancy.co.uk">www.marcrofttimberconsultancy.co.uk</a> ) Focus: practical research / innovation, design of structures, execution of structures and education/training. Facilities: Consultancy office only - testing work sub-contracted out		
	No. of staff	PhD students	MSc/year
	1	0	0
<i>Research projects</i>			
WG1 - BASIS OF DESIGN 1. Ongoing development of UK support documents to EN1995-1-1 - UK NA and PD6693-1 in collaboration with BSI committee B/525/5. 2. Ongoing project entitled 'Development of procedures in PD6693-1 for wall diaphragm design'.			
<i>Publications</i>			
WG1 - BASIS OF DESIGN 1. PD6693-1, UK support document to EN1995-1-1. 2. Compilation of BSI document 'Concise Eurocodes: Design of Timber Structures' intended to give a more accessible presentation of EN1995-1-1 for small consulting engineers. 3. Series of papers to BSI mirror committee for EN1995-1-1 to justify 'Design procedure for wall diaphragms' inserted in PD6693-1.			

**Prof. Dr. Cedric Montero (France)**

University of Montpellier  
 Montpellier, France  
[cedric.montero\(at\)umontpellier.fr](mailto:cedric.montero@umontpellier.fr)  
 COST FP1402, WG1 Member



<i>Personal</i>	<i>Organisation</i>		
Years of experience in relevant field: 27 Expertise: rheology, hygromechanical couplings of wood, long term deflection of timber Degree: PhD (1998)	Laboratory of Mechanics and Civil Engineering ( <a href="http://www.lmgc.univ-montp2.fr">www.lmgc.univ-montp2.fr</a> ) Focus: theoretical and practical research / innovation and education /training Facilities Mechanical testing machines (tensile, compressive, flexural tests), climate chambers (range of temperature and relative humidity on different volumes), vibrational and dynamical machines, thermal machines (oven, fluid heater).		
	No. of staff	PhD students	MSc/year
	14	3	2

**Research projects**

WG1:

'MechWood – Mechanical characterization of wood for knowledge-based timber industry', which was launched and partially funded within the initiative 'Building With Wood' by the European Confederation of Woodworking Industries (CEI-Bois) 2008-2011. ; de Borst, K. [TU Vienna]; Jenkel, C. [TU Dresden]; Montero, C. [LMGC]; Colmars, J. [LMGC]; Gril, J. [LMGC]; Kaliske, M. [TU Dresden] & Eberhardsteiner, J. [TU Vienna] <http://www.imws.tuwien.ac.at/en/mechwood/mechwood/>

**Publications**

WG1:

- . Montero, C.; Gril, J.; Legeas, C.; Hunt, D. G. & Clair, B. Influence of hygromechanical history on the longitudinal mechanosorptive creep of wood *Holzforschung*, 2012, 66, 757-764
- . de Borst, K.; Jenkel, C.; Montero, C.; Colmars, J.; Gril, J.; Kaliske, M. & Eberhardsteiner, J. Mechanical characterization of wood: An integrative approach ranging from nanoscale to structure *Computers and Structures*, Elsevier Ltd, 2013, 127, 53-67
- . Colmars, J.; Dubois, F. & Gril, J. One-dimensional discrete formulation of a hygrolock model for wood hygromechanics *Mechanics of Time-Dependent Materials*, 2013, 18, 309-328
- . Matsuo, M.; Yokoyama, M.; Sugiyama, J.; Kawai, S.; Gril, J.; Kubodera, S.; Mitsutani, T.; Ozaki, H.; Sakamoto, M. & Imamura, M. Aging of wood : Analysis of color changes during natural aging and heat treatment *Holzforschung*, 2011, 65, 361-368
- . Dlouhá, J.; Clair, B.; Arnould, O.; Horáček, P. & Gril, J. On the time-temperature equivalency in green wood: Characterisation of viscoelastic properties in longitudinal direction *Holzforschung*, 2009, 63, 327-333
- . Gril, J.; Hunt, D. G. & Thibaut, B. Using wood creep data to discuss the contribution of cell-wall reinforcing material. *Comptes rendus biologiques*, 2004, 327, 881-888
- . Hunt, D. G. & Gril, J. Evidence of a physical ageing phenomenon in wood *Journal of materials science letters*, 1996, 15, 80-82



**Dr. Vladimir Rodriguez Trujillo (Spain)**

Barcelona Tech - Universitat Politecnica de Catalunya

Barcelona, Spain

[biotectura\(at\)gmail.com](mailto:biotectura@gmail.com)

COST FP1402, MC Member, WG1 Member



<i>Personal</i>	<i>Organisation</i>		
Years of experience in relevant field: 10 Expertise: Timber construction, Numerical simulation of the thermal behaviour of wooden building, CLT architectural design Degree: PhD (2010)	Architectural Innovation and Technology Laboratory - LITA ( <a href="https://lita.upc.edu/en">https://lita.upc.edu/en</a> ) Focus: theoretical and practical research / innovation, and education/training. Facilities: CAD software, computers, studies rooms, building for testing in real scale.		
	No. of staff	PhD students	MSc/year
	12	5	15
<i>Research projects</i>			
Title: Cross-Laminated Timber: Demand, Supply and Research Duration: 2015-2016 People involved: 4 people from 3 differents institutions - Architectural Innovation and Technology Laboratory - LITA, Barcelona Tech. Barcelona, Spain - Forest Products Management Development Institute Chair Bioproducts and Biosystems Engineering Department, University of Minnesota. St. Paul, USA - Departament of Sustainable Biomaterials, Virginia Tech, USA			
<i>Publications</i>			
WG2			
Leoskool L., Rodriguez V., Descamps T., Van Parys L., 2014. Cross-laminated timber: Towards a consistent Structural Insulated Panel for Passive Buildings in Belgium. In: USB Proceedings of the WCTE 2014 World Conference on Timber Engineering. Quebec City.			
Espinoza O., Rodriguez V., Buelmann U., Laguarda M. F. 2015. Cross-Laminated Timber: Status and Research Needs in Europe. Bioresources Journal (under review - August 2015)			
Espinoza O., Buelmann U., Laguarda M. F., Rodriguez V. 2015. Research Needs of Cross Laminated Timber in North America (not yet published)			

**Ass. Prof. Ivan Sopushynskyy (Ukraine)**

Ukrainian National Forestry University

Lviv Ukraine

Sopushynskyy(at)nltu.edu.ua

COST FP1402, NNC Member, MC Observer, WG1 Member

*Personal*Years of experience in relevant field:  
1

Expertise: wood quality, timber construction, relation between wood and water, wood bridges, industrial norms

Degree PhD. (23.9.2014)

*Organisation*Botany, Wood Science and Non-Wood Forest Products  
(<http://ilspg.nltu.edu.ua/en/departments/bot/>)

Focus: theoretical and practical research/innovation, design of structures and education/training

Facilities: Laboratory of wood quality, testing machine, kiln chamber, construction of sound testing.

No. of staff	PhD students	MSc/year
25	10	15

*Research projects*Diagnose, qualimetry and breeding of forest tree species with desired wood quality in the FC "Berehomet forest-hunting enterprise"  
2014-2017, 17 people, <http://nltu.edu.ua/> and <http://blmg.com.ua/>*Publications*

Sopushynskyy I.M., Mayevskyy V.O., Volyanyk H.M., Kharyton I.I. (2014) Some Features of Qualimetry of Stemwood, Issue 24.11: 150-154.

Sopushynskyy I.M. Klym N.M., Kharyton I.I. (2014): European Experience in Pricing of Softwood Round Timber // Scientific Bulletin of UNFU, Issue 24.10: 29-34.

Sopushynskyy I., Vintoniv I. (2014): Wood Science. – Lviv: Liga-Press. – 144 p

Sopushynskyy I., Kharyton I., Teischinger A., Mayevskyy V., Heorhiy H. (2016) Wood density and annual growth variability of *Picea abies* (L.) Karst. growing in the Ukrainian Carpathians, Eur. J. Wood Prod., pp 1-10. <http://link.springer.com/article/10.1007/s00107-016-1079-1>

**Prof. Dr. John Dalsgaard Sørensen (Denmark)**

Aalborg University  
Aalborg Denmark

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COST FP1402, MC Substitute Member , WG1 member



<i>Personal</i>		<i>Organisation</i>		
Years of experience in relevant field: 35 Expertise: Reliability, stochastic modelling, standardization, development of standards Degree: PhD (01.03.1984)		Department of Civil Engineering ( <a href="http://www.civil.aau.dk/">http://www.civil.aau.dk/</a> ) Focus: theoretical and practical research / innovation and education / training Facilities: Structural testing lab		
		No. of staff	PhD students	MSc/year
		20	1	40
<i>Research projects</i>				
COST Action TU1402: Quantifying the Value of Structural Health Monitoring, 2015-2019, John dalsgaard Sørensen  COST Action TU0601: Robustness of Structures, 2007-2011, John Dalsgaard Sørensen  COST Action E55: Modelling of the Performance of Timber Structures, 2007-2011, John Dalsgaard Sørensen				
<i>Publications</i>				
Sørensen, J.D., E. Rizzuto, Harikrishna Narasimhan and M.H. Faber: Robustness – theoretical framework. Structural Engineering International, Vol. 1, 2012, pp. 66-72.  Köhler, J.D., J.D. Sørensen & M.H. Faber: Probabilistic Modelling of Timber Structures. Structural Safety. 2007, pp. 255-267.  Sørensen, J.D. & P.H. Kirkegaard: Probabilistic Robustness Analysis of Timber Structures – Results from EU COST Action E55:WG3. Taylor & Francis, CD-rom proc. ICASP11 conf., Zurich, Switzerland, 2011, pp. 1345-1352.				

**Dr. René Steiger (Switzerland)**

Empa, Materials Science and Technology  
 Dübendorf, Switzerland

[rene.steiger\(at\)empa.ch](mailto:rene.steiger(at)empa.ch)

COST FP1402, MC Substitute, WG1 Member



<i>Personal</i>	<i>Organisation</i>		
Years of experience in relevant field: 20 Expertise: Mechanical properties of solid timber and glulam, strength grading, quality control, buckling of columns, 2nd order structural analysis, seismic design of timber structures, test methods, code writing, glued-in rods  Degree: PhD. (23.07.1996)	Structural Engineering Research Laboratory (www.empa.ch) Focus: practical research/innovatgion, education/training and expert's opinion Facilities : Testing lab with 12.0 m x 40.8 m strong floor, several universal testing machines and hydraulic jacks of different capacities, extensive equipment for performing static and dynamic experiments in the lab and on-site, cable testing, concreting plant.		
	No. of staff	PhD students	MSc/year
	2	1	2

**Research projects****WG 2 - Solid Timber Construction:**

- Earthquake-resistant timber system for multi-storey buildings. 4 years. 4 persons.
- Assessment of the residual load-carrying capacity of large span glulam members with cracks. 2 years. 3 person.
- Homogeneous and combined glulam made from beech wood - Technical basis for the market implementation as building product used for beams and columns. 3 years. 4 persons.

**WG 3 - Connections:**

- Enhancement of compression perp. to grain strength of glulam with pin-shaped fasteners. 2 years. 3 persons.
- Structural behaviour of glued laminated timber beams with unreinforced and reinforced notches. 4 years. 3 persons.

**WG 4 - Hybrid Structures:**

- CLT-concrete composite slab lacking of any rebar and metallic shear connectors. 1.5 years, 3 persons.

**Publications****WG 1 - Basis of Design:**

Köhler J., Steiger R., Fink G., Jockwer R. 2012: Assessment of selected Eurocode based design equations in regard to structural reliability. Proceedings of CIB-W18 Meeting 45, Växjö, Sweden, August 27 – 30, 2012. Paper 45-102-1.

**WG 2 - Solid Timber Construction:**

Theiler M., Frangi A., Steiger R. 2013: Strain-based calculation model for centrally and eccentrically loaded timber columns. Engineering Structures 56: 1103 – 1116.

Steiger R., Gehri E. 2011: Interaction of shear stresses and stresses perpendicular to the grain. Proceedings of CIB-W18 Meeting 44, Alghero, Sardegna (Italy), August 28 – September 1, 2011. Paper 44-6-2.

Steiger R., Arnold A. 2009: Strength grading of Norway spruce structural timber: Revisiting property relationships used in EN 338 classification system. Wood Science and Technology 43 (3-4): 259 – 278.

Steiger R., Fontana M. 2005: Bending moment and axial force interacting on solid timber beams. Materials and Structures 38 (279): 507 – 513.

**WG 3 - Connections:**

Trustochowicz G., Serrano E., Steiger R. 2011: State-of-the-art review on timber connections with glued-in steel rods. Materials and Structures 44 (5): 997 – 1020.

Steiger R., Köhler J. 2005: Analysis of censored data - Examples in timber engineering research. Proceedings of CIB-W18 Meeting 38, Karlsruhe, Germany, August 29 – 31, 2005. Paper 38-17-1.

**Mr. Iztok Sustersic (Slovenia)**

CBD d.o.o. & University of Ljubljana  
 Celje, Slovenia

[iztok.sustersic\(at\)cbd.si](mailto:iztok.sustersic(at)cbd.si)

COST FP1402, WG1 Member



<i>Personal</i>		<i>Organisation</i>		
Years of experience in relevant field: 7 Expertise: Seismic modelling of CLT, seismic retrofit. Degree: Bachelor of Engineering (26.06.2008)		Development and Application of Timber Structures ( <a href="http://www.cbd.si">www.cbd.si</a> ) Focus: theoretical and practical research / innovation, design of structures, execution of structures, education/training and practical research in partner laboratories Facilities: Construction analysis software, in-situ testing equipment (thermal camera, etc.)		
		No. of staff	PhD students	MSc/year
		9	2	-
<i>Research projects</i>				
FP 1004; invited speakers at meetings and training schools (Cyprus and Trento), members of training Schools (Edinburgh).				
<i>Publications</i>				
FP 1004; meeting Zagreb (Simplified Cross-Laminated Timber Wall Modelling for Linear-Elastic analysis) meeting Cyprus (Use of CLT in Slovenia on Seismically Active Areas)				

**Dr. Abel Vega (Spain)**

CETEMAS

Asturias, Spain

avega(at)cetemas.es

COST FP1402, MC Substitute, WG1 Member

*Personal*

Years of experience in relevant field: 8  
 Expertise: Structural timber characterization;  
 wood mechanical and physical properties,  
 wood technology, structural design

Degree: PhD (21.9.2013)

*Organisation*

Wood Technology and Construction  
 (www.cetemas.es)

Focus: theoretical and practical research/  
 innovation and education/training.

Facilities: Testing labs (mechanical, physical  
 and chemical properties); Non-destructive  
 equipments (ultrasounds, modal analysis...);  
 numerical modelling software

No. of staff	PhD students	MSc/year
19	3	3

*Research projects*

2015-2016. Estudio de las propiedades estructurales de vigas de madera laminada encolada de Eucalyptus grandis producida en Uruguay para su asignación a clases resistentes. Integrante como Investigador Externo Postdoctoral. Fondo Sectorial Innovagro. Instituto Nacional de Investigación Agraria de Uruguay (INIA)

2010 – 2014. Hi Frettech Impregnation of Wood. Coordinator of Spanish working group (CETEMAS, INIA y TINASTUR). Wood Wisdom Research Programme, con Universidad George August de Göttingen (Germany)

2009 – 2012. Caracterización de la madera de castaño para su uso como madera estructural y su incorporación al Código Técnico de la Edificación. Integrante del Equipo. Subproyecto 2 (Normalización de la madera de castaño), integrado en el Proyecto Singular Estratégico 'VALOCAS: Valorización forestal e industrial del castaño en España'. Consejería de Educación y Ciencia-ayudas complementarias al MICINN

*Publications*

2015. Hermoso, E.; Vega, A. Effect of microwave treatment on the impregnability and mechanical properties of Eucalyptus globulus wood. Maderas: Ciencia y Tecnología 18(1)

2015. Vazquez, C.; Gonçalves, R.; Bertoldo, C.; Baño, V.; Vega, A.; Crespo, J.; Guaita, M. Determination of the mechanical properties of Castanea sativa Mill. using ultrasonic wave propagation and comparison with static compression and bending methods. Wood Science and Technology 49(3)

2013. Vega, A.; Arriaga, F.; Guaita, M.; Baño, V. Proposal for visual grading criteria of structural timber of sweet chestnut from Spain. Eur J Wood Prod 71(4)

2012. Vega, A.; Dieste, A.; Guaita, M.; Majada, J.; Baño, V. Modelling of the mechanical properties of Castanea sativa Mill. structural timber by a combination of non-destructive variables and visual grading parameters. Eur. J. Wood Prod. 70(6)