Short description of the organization		
Timber Research Group		
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Main topics	Example of activities	Number of scientists
Non-destructive testing methods	Non-destructive evaluation of	
	timber members and wood-ba-	
	sed components	2
Design of timber structures	Design of wood-based	
	components	
	New types of fasteners	
Main equipments: hydraulic servo testing maschines, spectrum analysers, triaxial strain analysers,		
climate box, electron microscope, ultrasonic devices, stress wawe device, penetration device, work-		
stations		

Activities related to the field of COST Action E24

Non-destructive evaluation of timber members and wood-based components

(P. Kuklík, T. Plachý, A. Kuklíková)

Non-destructive evaluation of timber members and wood-based components is a process during which is possible to investigate the properites of the respective members and components without their serious damage. There is a whole range of non-destructive testing methods and their accurancy is different: penetration method, ultrasonic method, stress wave method, modal analysis method.







The usability of these methods was verified at samples with the structural dimensions. The principle of the work lies in the search for statistic relationships between parameters characterising the timber quality (e.g. modulus of elasticity, bending strength and magnitudes measured by the above mentioned non-destructive testing methods (e.g. dynamic modulus of elasticity, natural frequency). Modal analysis involves the determination of modal parameters for members, components and structures. Modal parameters are essentially dynamic characteristics of an element determined by the mechanical interaction of structural geometry and material. Trough the use of modal analysis it is possible to correlate analytical models and experimental data.

Performance of Wood-based Shear Walls

(P. Kuklík, R.Brandejs)

In ENV 1995-1-1:1993 two methods are presented in order to determine the racking strength of cantilevered wall diaphragms. The first method is to calculate the racking strength according to a simplified procedure. The second one is to determine the racking strength by testing of prototype componets in accordance with EN 594. The presentation of the two methods in ENV 1995-1-1:1993 is a compromise and not obvious in all details. The purpose of this work is to study the test methods for evaluating the racking strength and the seismic performance of wood-framed shear walls. The quasi-static monotonic loading and the reversed cyclic loading were applied to the stapled joints and the wood-framed shear walls sheathed with the particleboards. The yield load, ultimate load and

the maximum displacement were determined by the several procedures, and the energy dissipation of the stapled joints and the shear walls were studied.



Load transfering metalwork used in timber engineering

(P. Kuklík, R. Štastný)

Load transfering metalwork is used in many different types of connections. In practice some typical and prevailing fasteners have been developed.

Their load-carrying capacities have been determined by tests.

The test methods used for this are substantially different and in many cases not matched with the intended field of application. Accordingly, characteristic load-carrying capacities or allowable loads are non-uniform in technical approvals and the real safety level of these types of fasteners is more or less unknown.

Our activities were initiated by the RILEM Technical committee TC 169-MTE in order to produce common rules for the determination of characteristic values describing the material properties used in the design of timber structures.



Selected references

Non-destructive evaluation of timber members and wood-based components Kuklík, P.: Nondestructive Evaluation of Wood Based Members and Structures with the Help of Modal Analysis. In: Publication of International Council for Building Research Studies and Documentation, Paper CIB-W18/30-10-1, Vancouver 1997, ISSN 0945-6996, 12 p.;

Kuklík, P. - Kuklíková, A.: Nondestructive Testing of Solid Timber. International Conference Wood and Wood Fiber Composites, Stuttgart, Germany, 2000, ISBN 3-89301-082-3, p. 303-312.