REPORT FROM TEMTIS CZECH COUNTRY SEMINAR

Rozvoj dřevěných konstrukcí –
- Development of Timber Structures

19. 04. 2007, BRNO, Czech Republic

Preamble

Nowadays the process of technical standards harmonization in the field of building structures culminates in Europe. This process concerns also the field of design of timber structures and brings many changes to the methodology of designing and assessment of supporting members, joints and whole systems. It is necessary to enable students of relevant fields at Civil Engineering faculties, as well as graduated construction experts that deal with the issue of timber structures professionally, to familiarize with such changes. There is a modern trend aiming at bigger use of timber and timber-based materials in construction. This trend is in harmony with the world-wide pursuit of sustainable development and bigger use of renewable materials and energies.

In the frame of the TEMTIS project a seminar called Development of Timber Structures took place in Press Centre of the complex of Trade Fairs Brno as a part of the supporting program of Building Fairs Brno 2007. The seminar was organized in cooperation of National Building Centre (NSC), Association of Timber Constructions Suppliers (ADMD) and VSB-Technical University of Ostrava.
The seminar took place under the auspices of Doc. Ing. Alois Materna, CSc., MBA, the Dean of the Faculty of Civil Engineering of VSB-Technical University of Ostrava.
The speakers of the seminar were not only representatives of the partner institutions of the TEMTIS project, but also experts from Mendel University of Agriculture and Forestry in Brno or Brno University of Technology. The seminar participants obtained a lot of information materials including a CD with seminar proceedings.

Program of the seminar

09.30 – 10.00	Registration of participants
10.00 - 10.30	Prefabricated timber structures – modern housing Ing. Antonin Lokaj, Ph.D.
10.30 - 11.00	Trends in development of structural systems of timber constructions Doc. Dr. Ing. Zdenka Havirova
11.00 - 11.30	Reinforced timber members Doc. Ing. Petr Kuklik, CSc.
11.30 - 12.00	Research in the field of timber structures Doc. Ing. Alois Materna, CSc., MBA
12.00 - 12.15	Coffee break
12.15 - 12.45	Multi-storey residential housing in the Czech Republic Ing. Jiri Pohloudek
12.45 – 13.15	Nondestructive evaluation techniques (NDE) for timber structures Doc. Dr. Ing. Petr Horacek
13.15 - 13.45	Knowledge based on designing and realization of bearing timber structures Doc. Ing. Bohumil Straka, CSc.

Discussion, end of the seminar

Abstracts:

Abstracts of the speakers presentations follow. One more abstract of an article written by Assoc. Prof. Miroslav Premrov is included as it is a part of the seminar proceedings although Assoc. Prof Premrov did not speak at the seminar.

PREFABRICATED TIMBER STRUCTURES - MODERN HOUSING
Antonin Lokaj
The article deals with advantages of the technology of prefabricated timber structures used in residential housing.

TRENDS IN DEVELOPMENT OF STRUCTURAL SYSTEMS OF TIMBER CONSTRUCTIONS
Zdenka Havirova
Increased attention has been paid to the use of timber and timber-based materials lately in the Czech Republic. In European countries where these types of

constructions have a long tradition, many new and structurally interesting systems have been developed. With majority of them the influence of timber on the interior quality, often combined with other natural materials is applied.

REINFORCED TIMBER MEMBERS
Petr Kuklik, Lenka Melzerova, Jan Vidensky
The reinforcement of timber elements is presented. Advancement is glued-laminated timber (glulam) technology is now essential. Glulam can be made more efficient through the use of high-strength fibre-reinforced laming. The test beams ware commercially produced. Flexural tests were conducted under two-point loads. The paper presents the test results of beams loaded up to failure.

RESEARCH IN THE FIELD OF TIMBER STRUCTURES
Alois Materna
Research and educational activities of the Faculty of Civil Engineering of VSB-Technical University of Ostrava in the field of timber structures designing are the main topic of the article

MULTI-STOREY RESIDENTIAL HOUSING IN THE CZECH REPUBLIC
Jiri Pohloudek
Nowadays, the timber-based construction focuses mainly on the area of family houses. Though, larger and multi-storey houses have their tradition in Czech Republic as well (i.e. buildings of Arch. Dusan Jurkovic or a bathhouse in Karlova Studanka). Larger houses were built very carefully within the socialism period. At that time stricter fire regulations have been promoted, which are valid till the present time. The Czech Republic is stricter then some EU member states in this respect. In spite of it, 350 multi-residential houses, usually with four of six flats were built during the 1970s and 1980s. They have still been in use being able to undergo restoration to fulfill present residential needs.

NONDESTRUCTIVE EVALUATION TECHNIQUES (NDE) FOR TIMBER STRUCTURES
Petr Horacek
A variety of NDE techniques can be employed by an inspector in order to determine the condition of a timber structure. Advances are needed to improve the effectiveness of predicting timber properties and overall structural capacity from various NDE methods. The goal of this paper is to describe a combination of techniques that will provide a more effective prediction of timber structure condition and capacity.

KNOWLEDGE BASED ON DESIGNING AND REALIZATION OF BEARING TIMBER STRUCTURES
Bohumil Straka
Glued lamellar and laminated timber is very efficient building materials which allowing to design structures of great spans constructions and difficult geometric shapes. Bending of lamellas before gluing in parts provides the possibility to create various types of girders, frames and arches according to the architect's or engineer's intention. The article summarizes some principle conclusions related to the issue of

designing and realization of timber gluelam structures from the article author's point of view.

EXPERIMENTAL ANALYSIS OF PREFABRICATED TIMBER-FRAMED WALLS STRENGTHENED WITH CFRP STRIPS
Miroslav Premrov
The paper provides an experimental analysis of timber-framed walls coated with carbon fibre-reinforced polymers (CFRP) strengthened fibre-plaster boards (FPB). The elements are usually used as main bearing capacity elements in the construction of prefabricated multi-level timber residential buildings. It has been shown that the inclusion of CFRP diagonal strip reinforcement on the load-carrying capacity can be quite high that it is maximized when the CFRP a trip are connected to the timber frame.

Text of the questionnaire

The questionnaire consists of 10 questions, where 8 questions are closed questions offering answers Yes or No and 2 questions leave a space for participants' ideas and comments.
1) Do you consider the development of construction systems of timber structures sufficient?
2) Do you consider the trend of development of timber structures sufficient?
3) What is your evaluation of timber residential housing in the Czech Republic?
4) Do you have any comments to timber elements and joints?
5) Do you have any comments to the non-destructive testing techniques of the state and properties in structures?
6) Do you consider the seminar to be an accompanying part of the Brno Building Fair advantageous?
7) Were you satisfied with the seminar?
8) Do you recommend the content of the seminar to be widened?
9) Do you recommend repetition of the seminar?
10) What was crucial for you for choice of this seminar?

Evaluation of questionnaires

Altogether there were 81 participants attending the seminar, of which: 61 were participants from wide public, 7 students, 3 journalists and 10 TEMTIS project partners and speakers. 32 participants filled in the questionnaire and sent it to P1.
The results are as follows:

1) Trend is o.k., 21 Yes (65%), 11 No (35%).
2) Results were very similar 19 Yes, 13 No.
3) 28 agree, which is about 90%.
4) 25 participants have no comments (78%), 5 participants have comments, only 2 participants have no opinion.
5) The same results as in question 4.

6) 23 participants (72%) are satisfied, 8 persons are not due to limited time.
7) 25 participants have been satisfied, 3 persons have not.
8) 9 persons recommend adding some points into the seminar content, 22 persons do not (70%).
9) 28 participants (87%) have recommended repeating the seminar.
10) 30 participants (93%) have expressed positive opinion.

Comments:

Question No. 3:
Deficiency of bases for design
Very limited amount of structures have been provided

Question No. 8:
Theme of timber bridges and footbridges should be included
Typological development of timber structures and their regional types should be included
Construction details book should be edited

Question No. 10:
Interest in timber structures field
Seminar was arranged as a part of IBF
Well known specialists were lecturers

Summarizing evaluation of the seminar

Seminar was successful, interesting, well organized, led and prepared by top specialists in the field of timber structures. The number of participants was very high; majority of them (60%) fulfilled the questionnaire. Their evaluation confirmed the quality of the seminar and recommended repetition of the seminar. The seminar was considered very successful both from the aspect of great interest of students and wide public, suitable location and date as well as expert personalities.

The report was compiled by Jiri Plicka (P4) and Marcela Zahnasova (P1).