REPORT FROM TEMTIS TEACHING SEMINAR

28.3.2008, OPOLE, Poland

Preamble

The third seminar, but the first teaching seminar organized in the framework of the TEMTIS project took place in Opole, Poland on 28.3.2008. It was organized by the Technical University of Opole.
The speakers at the seminar were representatives of project partner institutions. The seminar participants were students and lecturers of Technical University of Opole and the representatives of the project partner institutions. The seminar participants obtained lots of information concerning timber structures and constructions.
The aim of the seminar was to demonstrate the products to a selected local audience and to test the materials prepared within the project.

Program of the seminar

The Teaching seminar
Date: Friday 28.3.2008
Meeting place: Auditorium, 1st floor / Technical University of Opole, ul. Katowicka 48, 45-061 Opole

09:00	**Opening**	
9:15 – 10:35	**Presentation of chapters from Handbook 1**	
09:15 – 09:35	Chapter no. 2 – Wood properties	P.Kuklík
09:35 – 09:55	Chapter no. 14 – Bracing of timber buildings	A.S.Hansen
09:55 – 10:15	Chapter no. 12 – Spatial timber structures	A. Lokaj
10:15 – 10:35	Chapter no. 13 – Timber frame houses	M.Premrov
10:35 – 10:50	Coffee Break	
10:50 – 12:15	**Presentation of Case studies**	

10:50 – 11:10	Case stud no. 6 – Production building	A.S.Hansen
11:10 – 11:35	Case study no. 8 – Terme Zreče Case study no. 13 – Sports Hall Rogla	M.Premrov M.Premrov
11:35 – 11:55	Case study no. 7 – Furniture	A.Marynowicz
11:55 – 12:15	Case study no. 1 – Bully Arena	A.Lokaj
12:15 – 12:30	Discussion	
12:30	**End of the seminar**	

Abstracts

Abstracts of the speakers' presentations follow.

1. **Chapter no. 2** – Wood properties – Petr Kuklík

The trunk is of primary interest to the structural engineer as it is from the trunk that structural timber is milled. In order for us to understand the behaviour and limitations of timber, some basic information and understanding of wood from the trunk is necessary. Features of the growing tree are:
Bark - The outer layers protect the trunk from fire, temperature, injury. The inner layers transport nutrients from the leaves to growth areas.
Cambium - The growth centre where new wood cells are formed. New wood cells grow towards the inside and new bark grows towards the outside of the cambium.
Sapwood - New cells which form vertical conduits for water and nutrients from the roots to the leaves. Cell walls are still growing inwards, and are laden with starches for their own growth.
Heartwood - Cells in the heartwood have stopped growing and form receptacles for waste products (extractives). This is older and often harder wood, although it is not necessarily stronger.
Extractives - By-products of growth reactions that are stored in cells of the heartwood. The actual composition of the extractives varies from species to species and in the minor elements, from tree to tree. Some extractives are toxic to fungi and some insects.
Juvenile wood - This is the first wood laid down by the tree very early in its growth and is therefore near the centre of the tree. It tends to be inferior in density and cell structure. Generally, juvenile wood is a very small part of the cross section except in rapidly grown plantation grown timber.
Pith - The very centre of the trunk is the thin dark band that once was a twig or shoots.

2. **Chapter no. 14** – Bracing of timber buildings – Anders Soevsoe Hansen

Structural systems must bee designed to carry horizontal loads caused by wind, accidental and seismic loads, braking forces from cranes etc to the foundation. The system can also be used to stabilize members in compression.
There are reports from many countries, where they have observed severe problems with mistakes in the bracing of building. It is important, that the constructor can give a documentation of all steps in the way the forces are going from the load actions to the foundation.
This chapter will first be concentrated on systems for simple buildings and at the end there will be given examples of more complex structures.
In practice the principal check of the bracing in buildings with rectangular plans are often divided in 1) transverse loads and 2) longitudinal loads. (In the detailed calculations it is sometimes necessary to take in account correlated forces in both directions).

3. **Chapter no. 12** – Spatial timber structures - Antonín Lokaj

The chapter deals with spatial, mainly roof structures from timber-based materials. These structures represent technically and economically effective and architecturally impressive way of large objects roofing, often with relatively intended floor plan.

4. **Chapter no. 13** – Timber frame houses – Miroslav Premrov

Nowadays, there are the strongest arguments for building timber frame buildings. Brand new and improved features, being introduced in the early 80s in the last century, brought about the expansion of timber frame buildings all over the world.

The presented case studies are currently available at the private part of the project website. After evaluation they will be made available for all interested at the public part of the project website together with remaining case studies and Instruction handbook.

Apart from the seminar most of the participants took part in an excursion to a wooden church in Krzyzanowice and an open-air museum with various types of wooden houses which were typical for Poland in the previous centuries.

Text of the questionnaire

The questionnaire consists of 6 questions, where 5 questions are closed questions and 1 question leaves space for participants' ideas and comments.
1) Did you like the presentations?
2) Which presentation did you like the most?
3) Which presentation did you like the least?
4) Would you like to participate in similar seminars in the future?
5) Did you like the choice of event location?
6) What topics for future seminar would you suggest?

Evaluation of the questionnaires

Altogether there were 64 participants attending the seminar, of which: 55 were students and 9 TEMTIS project partners and speakers. 20 participants filled in the questionnaire and handed it to P9 for evaluation.

The results are as follows:

1) Enjoyed presentations - 17 Yes (85%), 0 No (%), 3 Rather yes (15%).
2) 7 students liked all presentations, 3 can't decide.
   The most enjoyed presentations by:
   A.Marynowicz – 3 students, A.Lokaj – 4, P.Kuklík – 1, A.S.Hansen – 1 and M.Premrov – 1.
3) For 11 students there was no presentation they did not enjoy, 4 can't decide.
   The least enjoyed presentations by:
   A.Marynowicz – 1, A.S.Hansen – 1, M.Premrov – 2.
4) 19 out of 20 students would like to take part in similar seminar in the future.
5) 16 out of 20 students were satisfied with choice of venue.
6) The most often proposed topics for future seminars are:
   Sports objects in Poland
   Large bridges and highways
   Towers, halls, dams
   Power stations
   Bridge supports
   Modern formwork systems
   Physics of materials.

Summarizing evaluation of the seminar

The teaching seminar in Opole was the first of two teaching seminars organized within the TEMTIS project. Generally we can say that the seminar was successful both from the aspect of number of participants from the group of students and results of the questionnaires.
The seminar programme was well prepared; almost all presenters had two presentations.
The indicator of a minimum number of participants (20) was fulfilled, the satisfaction (50%) as well.
The feedback from the participants was positive. Even from the point of view of the teachers we can say that the products are well prepared and can serve the purpose they are made for very well.
The photo documentation of the seminar is available at the private part of the project website and will be included in the CD for Final report.

Next teaching seminar will take place in Prague in June 2008.
Next country seminar will take place in Horsens in September 2008.

The report was compiled by Marcela Zahnasova (P1).