



SCHOOL OF ARCHITECTURE
NATIONAL TECHNICAL UNIVERSITY
OF ATHENS (NTUA)

COST Action FP1101

Assessment of historical timber structures, analysis of restoration works : on field experience

1st Training School – 2013

October 7th -10th, Athens, Greece

Content and Objectives

The aim of the training school is to present an overall and a multi-disciplinary approach of a restoration project concerning historic timber structures: the steps, the methodology, the problems, the solutions (final interventions) and generally the dilemmas that arise from the very beginning of a study till its final application (construction works). On the above basis, the main topic of the proposed program, “*From the analysis to the construction*”, is focusing on the following thematic areas concerning the assessment and reinforcement procedure of a restoration project :

– *Survey and Constructional analysis, Visual inspection – Visual grading, NDTs and Structural Analysis as tools for understanding and intervening on existing timber structures.*

Appropriate inspection and assessment methods provide the necessary data for historical analysis, assessment, structural safety, and planning of intervention works which will respect the building fabric, the original materials, structural systems and techniques.

– *Timber reinforcement methods, reinforcement of buildings against earthquakes using timber.*

The participants were trained by visiting 4 restoration projects (3 finished, 1 in progress), following on each site:

- lectures (theoretical background),
- presentations by slides of the restoration studies,
- presentations by slides and mainly videos of the assessment and reinforcing/repair methods used during the restoration works,
- field investigations and on-site demos on assessment and reinforcement methods.

Participation

Trainees (See attached file : *Trainers list Athens.pdf*)

- **Number of invited trainees : 24, from 11 European countries** (see attached catalog).
- **Number of officially invited local (Greek) trainees : 5**

The Training School was also followed by more **Greek participants** : ~22, who paid their own expenses . They were post graduate students of the NTUA Inter-Departmental Graduate Program for the "*Protection of Monuments*", members of the Hellenic Ministry of Culture and professionals that work on timber historical structures in Greece. Their presence is considered very important for the dissemination of the scientific and technological knowledge on the topic that COST Action (FP1101) is working on, a topic for which in Greece there is limited experience.

- Finally, only the lectures (morning session) given during the 1st and the 4th day of the Training School were followed by **Erasmus undergraduate students (~15)** of different European countries hosted by the Architecture School of NTUA.

Trainers (See attached file : *Trainees list Athens.pdf*)

- **Number of external invited trainers by COST FP1101 : 7**

Prof. C.Bertolini (Politecnico di Torino, Italy), Dr. A. Crivellaro (University of Padova, Italy), Dr. H. Cruz (Laboratorio Nacional de Engenharia Civil, Portugal), prof. A.Harte (National University of Ireland, Galway), prof. C. Menichelli (Ministry of Culture, Superintendence of Venice, Italy), Dr. M. Riggio (University of Trento-IVALSA, Italy), Dr. D. Yeomans (UK).

- **Number of local (Greek) trainers : 9** (See attached file : *Greek Trainees list Athens.pdf*)

Local organizers :

Eleftheria Tsakanika – Theohari
Member of the Management Committee of Cost Action FP1101
Dr. Civil Engineer, Lecturer
School of Architecture NTUA,
Tel: +306972880385, +302106890146
e-mail : eletsyaka@central.ntua.gr

Irini Efessiou
Architect, Professor
School of Architecture NTUA,
e-mail : irenefe@central.ntua.gr

Outcome

1. One of the most important outcomes of the Training School in Athens is the **dissemination of knowledge and sharing of experiences** among scientists of different countries (12) and from different scientific fields. The Training School was followed by architects, civil engineers, archaeologists, wood technologists and conservators either as trainees or trainers, since the aim of this TS was to present all the stages of a restoration project concerning historic timber structures (overall approach) and the need of a multi-disciplinary collaboration during all the stages of such project. The dissemination of knowledge and interaction was expanded during the 1st and the 3^d day of the TS to technicians that work on restoration projects in Greece. During the evening session (work on site) the technicians applied reinforcing methods under the directions of the trainers, participated in relevant discussions

and commented the presented videos of reinforcing/repair methods used by them during the actual restoration works.

2. Apart the presentations by slides of several restoration projects (morning session), the participants (trainees and trainers) had the opportunity to visit **1** under restoration and **10** restored historical buildings (5 the 1st day, 1 the 2nd day, 2 the 3^d day and 3 the 4th day) **discuss and comment on site the realized works.**
3. **Collection of information** relevant to the theme of the TS **and dissemination to the participants and Cost Fp1101 members.**
 - A cd was prepared and given to all participants the 1st day of the TS, containing papers from all the trainers relevant to their presentation.
 - A FTP server for the TS in Athens is going to be prepared by prof. Thierry Descamp (trainee in Athens and local organizer and trainer of the next Training School in Mons).

The FTP server will provide a platform with the necessary space in order all the participants to be able to upload photos and videos taken during the Training School. The above material will be used in order to be produced educational PowerPoint presentations and videos. Additional documents (papers and presentations of the trainers) will be uploaded too.


The FTP server will be protected by a login and a password. In the beginning all shared documents will remain "private" as the access to the FTP server will be restricted to the participants of the Training School in Athens (trainees and trainers). Than a part or all of the above collected material will be decided to be open to all members of the Cost Action FP1101 or even to be free in the web.
 - For the trainees additional "homework" relevant to the scientific topics and the cases presented during the TS with ECTS credits when needed is organized. All trainees have to deliver it in the next 3 months.

All the above gathered information can be of major importance for many young researchers, scholars and professionals in the filed of the assessment and reinforcement of existing timber structures.

Monday 7/10/2013 1	8.00 (Meeting point – Filellinon and Xenofodos str., Syntagma Square, Athens)	<p>Departure by bus to Technological and Cultural park in Lavrio (LTCP) (Industrial Complex of the Lavrion French Mining Company – new use as LTCP) http://www.ltp.ntua.gr/home_en</p>	
	9.20	Arrival to Lavrio	


*From the analysis to the construction.
Survey and constructional analysis, a tool for understanding existing structures*

		Lectures	Trainers
	9.20-9.45	Registration	
	9.45-10.00	Welcome	E. Tsakanika, Lecturer NTUA
	10.00-10.30	<i>Historical Information for the Technological and Cultural park</i>	prof. N. Belavilas, NTUA
	10.30-11.30	<i>Restoration projects – Methodology : From the Industrial Complex to the Technological park of Lavrio</i>	prof. E. Efessiou, NTUA prof. F. Goulielmos, NTUA
	Coffee break		
	12.00-12.45	<i>Matsopoulo's wheat mill in Trikala. Restoration and museological study</i>	prof. S. Charalabidou, NTUA
	12.45-13.10	<i>Documentation, Constructional analysis : a tool for understanding existing structures. Building Assessment works and Immediate Measures for the Lavrio Industrial Complex</i>	prof. P. Toulaiatos, NTUA
	13.10-13.30	<i>Application of nanotechnology for the protection of wooden surfaces</i>	Dr. V. Theoharakis, NANOPHOS
	Lunch		
		Work on site	Trainers
	14.30-18.00	Visit of restored buildings. Presentation / discussion on-site of the restoration works. Application of nanotechnology for the protection of wooden surfaces	P. Toulaiatos, E. Efessiou, F. Goulielmos, E. Tsakanika, S. Charalabidou NANOPHOS
		<i>Departure by bus for Athens</i>	

Tuesday 8/10/2013 2	8.45	<p>Arrival to the post-Byzantine Benizelo's Mansion (Adrianou 96, Plaka, Athens) http://www.ewpa.com/Archive/2010/june/Paper_173.pdf</p>	



*From the analysis to the construction.
NDTs , Timber reinforcement methods, Reinforcement of the building against earthquakes using timber*

		Lectures	Trainers
	9.00-9.10	Welcome	Archdiocese of Athens
	9.10-10.30	<i>Wood and timber: from trees to buildings Application of NDT's for the assessment of timber structures</i>	Dr. A. Crivellaro University of Padova, Dr. M. Riggio, University of Trento, IVALSA, Italy
	10.30-11.30	<i>Timber reinforcement methods</i>	Prof. A. Harte, National University of Ireland
	Coffee break		
	12.00-12.50	<i>Presentation of the building</i>	E. Tsakanika, Lecturer NTUA
	12.50-14.00	<i>The restoration project (study and construction) of the Benizelo's Mansion</i>	E. Tsakanika, Lecturer NTUA G. Pavlopoulos, Conservator Msc, Aeinaes
	Lunch		
		Work on site	Trainers
	15.30-16.45	Application of assessment methods on site.	Dr. M. Riggio, Dr. A. Crivellaro, Prof. A. Pournou TEI, Athens
	16.45-18.30	Application of timber reinforcement methods on site.	A. Harte, G. Pavlopoulos E. Tsakanika

Wednesday 9/10/2013 3	7.30 (Meeting point – Central train station of Athens)	Departure (7.50) from the central train station of Athens to Chalkis (1,5h). <i>Church of Hagia Paraskevi, House of Bailos</i> http://www.icomos.org/iwcc/2007.htm	
	9.20	Arrival to Chalkis	

*From the analysis to the construction
Timber assessment and reinforcement methods (on going restoration works)*

	Lectures	Trainers
9.45-10.00	Welcome (Ministry of Culture)	Dr. P. Kalamara, Director of the Ephorate of Antiquities, Chalkis
9.45-10.30	<i>From the analysis to the construction. Case studies – European roofs.</i>	Prof. C. Bertolini, Politecnico di Torino, Italy
10.30-11.00	<i>From the analysis to the construction. The case study of the Venetian roof of Hagia Paraskevi.</i>	Prof. P. Toulaitos, NTUA, Prof. C. Bertolini, Politecnico di Torino
11.00-11.20	<i>Dendrochronology</i>	Dr. O. Pignatelli
Coffee break		
12.00-12.40	<i>The wooden roof structures in the Arsenal of Venice. History, studies and conservation issues.</i>	C Menichelli, Ministry of Culture, Superintendency of Venice
12.40-13.30	<i>The restoration project of the Bailos House (Venetian and Ottoman phase).</i>	G. Kourmadas, G. Taxiarchi, T. Palantzas, E. Tsakanika
Lunch		
	Work on site	Trainers
14.30-16.00	Visit of the on-going restoration works at the Bailos House. Presentation / discussions on-site.	G. Kourmadas, T. Palantzas, G. Taxiarchi, E. Tsakanika
16.00-18.00	Assessment of the timber elements of a timber-frame construction (Ottoman phase). Application of timber reinforcement methods on-site.	All trainers
18.30	<i>Departure by train for Athens</i>	

Thursday 10/10/2013 4	8.00 (Meeting point – Filellinon and Xenofodos str., Syntagma Square, Athens)	Departure by bus to Pyrgos Vasilissis (Queen's Tower), Ilion- Athens http://www.organizatiionearth.org/ http://www.wseas.us/e-library/transactions/environment/2008/28-140.pdf https://www.facebook.com/pages/Pyrgos-Vasilissis/335649833179230	 
	8.40	Arrival to Ilion	

*From the analysis to the construction.
Visual inspection – visual grading. Structural analysis as an assessment tool*

	Lectures	Trainers
9.00-10.00	<i>From the analysis to the construction</i>	Dr. D. Yeomans, UK
10.00-11.00	<i>Visual grading, an assessment tool for existing timber structures.</i>	Dr. H. Cruz, Laboratório Nacional de Engenharia Civil, Portugal
11.00-11.45	<i>Structural analysis as an assessment tool. Reinforcing a timber roof in Pyrgos Vasilissis</i>	E. Tsakanika, Lecturer NTUA
Coffee break		
	Work on site	Trainers
12.15-13.45	Visit of recently reinforced and reconstructed roofs	E. Tsakanika
Lunch		
14.30-15.30	Visual grading of old timber elements	H. Cruz, A. Crivellaro, Dr. D. Yeomans
15.30-17.00	Work on-site on the trusses of a 19 th century roof, 20m span.	All trainers
17.00-18.00	Visit of the recently restored Queen's Tower	
	<i>Departure by bus for Athens</i>	

	First name	Last name	Country	Institute	e-mail	1st DAY	2nd DAY	3d DAY	4th DAY
	LIST OF TRAINERS					TRAINING SCHOOL ATHENS GREECE, October 2013			
						ATTENDANCE PER DAY			
1	Clara	Bertolini-Cestari	Italy	Politecnico di Torino (prof.)	clara.bertolini@polito.it				
2	Mariapaola	Riggio	Italy	University of Trento-IVALSA (Dr.)	riggio@ing.unitn.it				
3	Alan	Crivellaro	Italy	University of Padova (Dr.)	alancrivellaro@gmail.com				
4	Claudio	Menichelli	Italy	Ministry of Culture, Superintendency of Venice	arch.menichelli@gmail.com				
5	Annette	Harte	Ireland	National University of Ireland, Galway (prof.)	annette.harte@nuigalway.ie				
6	David	Yeomans	United Kingdom	Civil Engineer (Dr.)	mail@davidyeomans.co.uk				
7	Helena	Cruz	Portugal	Laboratorio Nacional de Engenharia Civil (Dr.)	helenacruz@lnec.pt				
8	Panos	Touliatos	Greece	School of Architecture National Technical University of Athens	art.tp@frederick.ac.cy				
9	Sonia	Charalabidou	Greece	School of Architecture National Technical University of Athens	scharalambides@arch.ntua.gr				
10	Irini	Efessiou	Greece	School of Architecture National Technical University of Athens	irenefe@central.ntua.gr				
11	Fragiskos	Goulielmos	Greece	School of Architecture National Technical University of Athens	F.Goulielmos@arch.ntua.gr				
12	Nikos	Belavilas	Greece	School of Architecture National Technical University of Athens	nbelavil@arch.ntua.gr				
13	Eleftheria	Tsakanika	Greece	School of Architecture National Technical University of Athens	eletsaka@central.ntua.gr				
14	Anastasia	Pournou	Greece	Lab. of Wood Conservation, Techn. Educational Institute of Athens	pournoua@teiath.gr				
15	George	Pavlopoulos	Greece	Conservator MSc, AEINAES	gpa167@otenet.gr				
16	Vasilis	Theoharakis	Greece	Nanophos (Dr.)	info@nanophos.com				

Total number of trainers per day

11	10	10	9
-----------	-----------	-----------	----------

	First name	Last name	Country	Institute	Degree / Field of study	e-mail
LIST OF TRAINEES TRAINING SCHOOL ATHENS GREECE, October 2013						
1	<i>Thierry</i>	Descamps	Belgium	University of Mons	Phd - Civil Engineering (prof.)	thierry.descamps@umons.ac.be
2	<i>Marta</i>	Čukman	Croatia	Faculty of Civil Engineering Zagreb	Master student	marta.cukman@gmail.com
3	<i>Lucija</i>	Karaula	Croatia	Faculty of Civil Engineering Zagreb	Master student	lucijakaraula1@hotmail.com
4	<i>Martti</i>	Lainurm	Estonia	Wood NDT	Civil Engineer MS	martti@majavamm.ee
5	<i>Simone</i>	Rossi	Italy	University of Trento	Msc Engineering	simone.rossi1@unitn.it
6	<i>Paolo</i>	Grossi	Italy	University of Trento	Msc Engineering	paolo.grossi@unitn.it
7	<i>Alberto</i>	Cavalli	Italy	GESAAF, Department of Agricultural, Food and Forestry Systems, University of Florence	Degree in Forestry sciences - field of study: assessment, reinforcement and monitoring of old timber structures; visual strength grading of old and new timber. Visual tree assessment	alberto.cavalli@unifi.it
8	<i>Olivia</i>	Pignatelli	Italy	Dendrodata s.a.s. - Laboratory for dendrochronological research	PHD. /dendrochronological dating of ancient timber structures	dendrodata@tin.it
9	<i>Conan</i>	O'Ceallaigh	Ireland	National University of Ireland, Galway	Civil Engineering	c.oeallaigh1@nuigalway.ie
10	<i>Jan</i>	Siem	Norway	Department of Architectural Design, History and Technology, NTNU	Dr. ing, Professor/Historic Timber Structures	jan.siem@ntnu.no
11	<i>Filippo</i>	Frontini	Norway	Department of Architectural Design, History and Technology, NTNU	MC/Historic Timber Structures	Filippo.frontini@ntnu.no
12	<i>Pawel</i>	Czarniak	Poland	University of Live Science in Warsaw	PhD student	pawel_czarniak@sggw.pl
13	<i>Izabela</i>	Burawska	Poland	Faculty of Wood Technology in Warsaw	PhD student	izaburawska@o2.pl
14	<i>Hélder</i>	Sousa	Portugal	Institute for Sustainability and Innovation in Structural Engineering (ISISE).Department of Civil Engineering, University of Minho	Master in Civil Engineering, PhD student / Mehtodologies for safety assessment of existing timber structures. Non-destructive testing and reliability assessment	hssousa@civil.uminho.pt
15	<i>Elisa</i>	Poletti	Portugal	Institute for Sustainability and Innovation in Structural Engineering (ISISE) Department of Civil Engineering, University of Minho	Master in Civil Engineering, PhD student / Experimental testing of seismic behaviour of traditional timber frame walls Strengthening of traditional timber frame walls for seismic actions using traditional and innovative techniques	elisapoletti@civil.uminho.pt
16	<i>Maria</i>	Henriques	Portugal	INSTITUTO SUPERIOR DE ENGNHARIA DE LISBOA	Dr. ing.	dulce.fr.henriques@gmail.com
17	<i>Tomaž</i>	Pazlar	Slovenia	Slovenian National Building and Civil Engineering Institute	Timber structures	tomaz.pazlar@zag.si
18	<i>Teresa</i>	Artola	Spain	The University of the Basque Country	PhD candidate/Reinforcement timber structures	teresartola@gmail.com
19	<i>Vladimir</i>	Rodríguez	Spain	Catalan Institute of Wood	PhD/Assessment timber structures	vladimir.rodriguez@incafust.org
20	<i>Almudena</i>	Majano-Majano	Spain	ETS Architecture - Technical University of Madrid	PhD Student/ Timber structures	almudena.majano@upm.es
21	<i>Abel</i>	Vega Cueto	Spain	CETEMAS	Forest Engineer	abelvegacueto@gmail.com
22	<i>Natalie</i>	Quinn	United Kingdom	University College London	PhD Civil Engineering	n.quinn.12@ucl.ac.uk
23	<i>Carina</i>	Fonseca Ferreira	United Kingdom	University College London	PhD - Earthquake Engineering and Conservation of Historic Constructions	c.ferreira.12@ucl.ac.uk y.aktas@ucl.ac.uk
24	<i>Yasemin Didem</i>	Aktas	United Kingdom	University College London	PhD/Structural Engineering	yasemindidem@yahoo.com

	First name	Last name	Institute	Profession	1st DAY	2nd DAY	3d DAY	4th DAY
LIST OF GREEK TRAINEES					TRAINING SCHOOL ATHENS GREECE October 2013			
					ATTENDANCE PER DAY			
1	<i>Pinelopi</i>	Kalafata	Ministry of Culture Rhodes	Civil engineer	yes			
2	<i>Vasiliki</i>	Anagnostopoulou	Techn. Educational Institute of Athens	Conservator				
3	<i>Mihalis</i>	Koufopoulos	Techn. Educational Institute of Athens	Conservator				
4	<i>Eleni</i>	Zarogianni	Ministry of Culture Athens	Civil engineer				
5	<i>Ifigeneia</i>	Papadopoulou	Ministry of Culture Athens	Civil engineer				
6	<i>Nikos</i>	Kontogiannis	Ministry of Culture Chalkis	Archaeologist				
7	<i>Giorgos</i>	Kourmadas	Ministry of Culture Chalkis	Architect				
8	<i>Giota</i>	Taxiarhi	Ministry of Culture Chalkis	Archaeologist				
9	<i>Thodoris</i>	Palantzas	Ministry of Culture Chalkis	Civil engineer				
10	<i>Euridiki</i>	Katsali	Ministry of Culture Chalkis	Architect				
11	<i>Eleni Athina</i>	Aggeli	Ministry of Culture Chalkis	Architect				
12	<i>Augoustina</i>	Sxolidou	Ministry of Culture Chalkis	Architect				
13	<i>Stavros</i>	Papazoglou	Ministry of Culture Chalkis	Architect				
14	<i>Myrto</i>	Tsitsinaki	Ministry of Culture Chalkis	Civil engineer				
15	<i>Athina</i>	Poulou	Ministry of Culture Chalkis	Architect				
16	<i>Christina</i>	Charami	NTUA Post Graduate program	Architect				
17	<i>Fotis</i>	Kondis	NTUA Post Graduate program	Civil engineer				
18	<i>Marilena</i>	Doukeri	NTUA Post Graduate program	Civil engineer				
19	<i>Katerina</i>	Vavaliou	NTUA Post Graduate program	Architect				
20	<i>Nikos</i>	Xanthos	NTUA Post Graduate program	Architect				
21	<i>Eleni</i>	Deligianni	NTUA Post Graduate program	Architect				
22	<i>Varvara</i>	Valakou	NTUA Post Graduate program	Architect				
23	<i>Aggeliki</i>	Valakou	NTUA Post Graduate program	Civil engineer				
24	<i>Christianna</i>	Veloudaki	NTUA Post Graduate program	Architect				
25	<i>Giorgos</i>	Kanavakis	MSc Professional Conservator	Architect				
26	<i>Liana</i>	Efthimiadou	MSc Professional Conservator	Architect				
27	<i>Father</i>	Christodoulos	Mitropolis of Goumenissa					

Greek trainees	16	19	19	14
----------------	-----------	-----------	-----------	-----------