



# PROCEEDINGS

New Generation Earthen Architecture:  
Learning from Heritage

# kerpic'13

international conference

11-15 SEPTEMBER, IAU ISTANBUL, TURKEY

Organized by,  
ISTANBUL AYDIN UNIVERSITY  
KERPIC NETWORK





**PROCEEDINGS**

**For the Third International Conference**

**kerpiç'13**

**New Generation Earthen Architecture:  
Learning from Heritage**

**11-15 September 2013**

**Organized by**

**Istanbul Aydın University**

**Kerpiç Network**

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Istanbul Aydın University  
Kerpiç Network**

**Themes of the Conference**

1. New generation earthen architecture
2. Learning from heritage
3. Mediterranean earthen architectural heritage
4. Living sites and local knowledge
5. Disaster prevention
6. Standards and guidelines
7. Advances in researches
8. Earthen architecture with ultimate technologies

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Dear Colleagues,

Istanbul Aydin University and The Kerpiç Network are pleased to welcome you to the third International Conference on **kerpic'13 - New Generation Earthen Architecture: Learning from Heritage**, 11-15 September 2013, Istanbul, Turkey.

Kerpiç-network is carrying researches over thirty years on durability, seismic response and production techniques on earthen construction material. Durability researches are based on gypsum & lime stabilization of earth, called "alker"; seismic response researches are based on horizontal energy dissipation surfaces in the load bearing walls and production techniques are based on compacting and shote-crete production of earthen walls

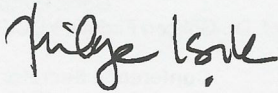
The focus of the conference has evolved from new generation of earthen architecture, environment and health care, towards disaster prevention. We hope that it will bring together the related disciplines of architects and engineers, on material, construction, marketing and environmental science to create database, technology watch and strategy.

A workshop will be organized on site showing shote-crete production of earthen walls, where all the participants can take part. Social and cultural program will offer an interesting historical tour and a distinguished dinner will welcome you. Post Congress program will be a tour to the sites of Turkey including Çatalhöyük near Konya and Antalya together with Perge.

Our deepest thanks goes to ICOMOS, ISCEAH members who supported the conference as scientific committee.

It is our pleasure to welcome you to the international conference **kerpic'13**

**Prof. Dr. Bilge IŞIK**, Conference Chair



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**WORKSHOP**  
**International Conference on kerpıc'13**  
**New Generation Earthen Architecture: Learning from Heritage,**  
**11-15 September 2013, Istanbul, Turkey.**  
[www.kerpıc.org/2013](http://www.kerpıc.org/2013)  
[www.kerpıc.org](http://www.kerpıc.org)

**PROGRAMM**  
**12 September 2013, at 16.00**

**VENUE: Campus of Istanbul Aydin University, Florya - Istanbul**

**Objective of the workshop**

Traditional production techniques are time taking. Construction of earthen architecture today needs to follow the contemporary technology: applying the shot-crete technology to earthen construction

**Summary**

Earth can be stabilized with different methods. It is essential to understand the difference and efficiency of each technique. Istanbul Technical University is working on gypsum stabilization. New composite is called Alker. This technique is recovered and improved from architectural heritage, in northern Mesopotamia, by Prof. Ruhi Kafescioglu from Istanbul Technical University and his research team, since 1976. The four pilot buildings, constructed at 1983, 1995, 1997, and 1999 are still inhabited. Workshop will serve participants to understand the composite and to construct with. [www.kerpıc.org](http://www.kerpıc.org) Unit weight: 1.6-1.7 kg/lt, Shrinkage: 1.0-1.5%, Compressive strength: 2.0-4.0 N/mm<sup>2</sup>, Shear strength: 0.9-1.3 N/mm<sup>2</sup>, Water absorption: very low, Low heat transfer value: 0.4-0.5 kcal/mhC

**Advantages of the shot-crete technique:**

Production with contemporary techniques – in all summer period

Production with ramming (compaction) techniques – 3m<sup>3</sup> in a day-(4laborer)

Production with shot-crete techniques (minimum) 3m<sup>3</sup> /Hours -(4laborer)



**1. ACTION: Proportioning of gypsum stabilization, Alker:**

Presentation of proportioning

Ingredient	% by Weight	Practical Measures
Soil	100	2 full wheel barrow
Water	18-22	1 bucket full
Lime	2	1 shovel full
Gypsum	10	4 shovel full

**2. ACTION: shot-crete production with air compressor**

Demonstration

**Kerpik'13 - New Generation Earthen Architecture: Learning from Heritage,**

3. International Conference

11-15 September 2013, İstanbul Aydın University, Turkey

**OPENING REMARKS**

Speaker 1. Prof.Dr. Bilge IŞIK (Conference Chair)

Speaker 2. Prof.Dr. Yadigar IZMIRLI (Rector)

**INVITED SPEAKERS**

Speaker 1. Doğan KUBAN

Speaker 2. Cengiz BEKTAŞ

Speaker 3. Marcial BLONDET

Speaker 4. Randolph LANGENBACH



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## Proposals for Sustainability of Mud Brick Building Tradition in Osmaneli



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### ABSTRACT

This study contains proposals for sustainability and protection of historic mud brick structures in Osmaneli which is settled on a valley surrounded by mountains covered with pine forests in the south part of Sakarya River. Osmaneli is one of the rare settlements which preserved its historic and cultural fabric to the present. The three components of historic buildings; mud brick, wood and stone had been used together masterfully during the construction of structures. Rubble stone was used on the foundations of the structures, then constructors built timber frames on it and filled the spaces with mud bricks by using a special technic called "hımış" and plastered the walls with mud plaster. The roofs with large eaves of the houses are fascinating. In XVII. Century, the raising of silkworms and silk culture was one of the main income source for local people. As an economic act, sericulture attracted the city architecture and interior uses of houses in Osmaneli. Between XVII.- XX. Centuries, natives of the town, Greeks and Turks lived together and produced silk in their houses. But after the independence war, as a result of the changing programme, new settlers arrived to the town. Silk culture was unknown subject for them. In addition that, due to lack of spatial and numerical aspects of houses for this activity, raising of silkworms was ended. Large residences which was previously used by single-family, was divided into two or three family use, while floors or rooms for silkworm converted into living quarters. As a result of transformation of the building, structural elements and the space such as stairs, bathroom, toilet, kitchen, started to be added to the building and the spatial layout of the buildings started to be deteriorated. During the observations for the study of the documentation, it was identified that wood carcasses and mud brick which were used as main building material in historic structures, were seriously affected especially opening chapters of the roof by adverse environmental conditions. In this context, historical buildings are at serious risk. For the viability of the tradition of mud-brick structure in the county, within the scope of the material research program consisting of following studies, will contribute to the successful conservation work in Osmaneli.

Investigation of the traditional mud brick production approach, by analyzing the samples with contemporary techniques, Mud bricks production in the light of the data obtained from experiments, Implementation of mud brick conservation by taking advantage of the methods contained in the successful realization.

**Keywords:** Mud bricks, sustainability, historic, silk culture, conservation.





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