

EWCHP-2013

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3rd European Workshop

on Cultural Heritage Preservation

Bozen / Bolzano, Italy, September 16 to 18, 2013

www.3encult.eu/en/ewchp



1st day – Workshop

Monday, 16th September 2013

8.30 REGISTRATION

9.30 Welcome and opening

9.40 KEYNOTE

SESSION I ASSESSMENT OF INDOOR AIR & CLIMATE CHANGE IMPACT ON CULTURAL HERITAGE OBJECTS

10.00 **The “Memori System”; measurements, effect assessment and mitigation of pollutant impact on movable cultural assets. Innovative research for market transfer**

T. Grøntoft, E. Dahlin, S. Håland, H. Vika Røen, T. Heltne, D. Thicket, P. Lankester, A. Schieweck

10.20 **The impact of organic acids on varnishes in museum environments**

I. Bonaduce, M.P. Colombini, F. Di Girolamo, Sibilla Orsini, M. Odlyha, S. Rutkowska, M. Scharff, T. Grøntoft

10.40 COFFEE BREAK

11.00 **Adaptation of energy storage systems to Cultural Heritage: the application of Phase Change Materials technology to historical buildings and objects**

A. Bernardi, F. Becherini, M.D. Romero-Sanchez, Ángel M. López-Buendía, A. Vivarelli, P. Moretti, G. Baldisseri, C. Ghiretti, L. Pockelé

11.20 Introduction into Climate for Culture

11.30 **The climate for culture method for assessing future risks resulting from the indoor climate in historic buildings**

R. Kilian, T. Broström, J. Ashley-Smith, H.L. Schellen, M. Martens, F. Antretter, M. Winkler, C. Bertolin, D. Camuffo, J. Leissner

11.50 **Experimental methods on monitoring of materials surfaces in climate change conditions**

V. Tornari, E. Bernikola, J. Leissner, C. Bertolini, D. Camuffo

Surface Analysis of varnishes and collagen-based materials (parchment and leather): physicochemical characterisation and effect of nanoparticle-based conservation treatment

M. Odlyha, L. Bozec, S. Hackney, M. P. Colombini, I. Bonaduce, F. Di Girolamo, R. Larsen, K. Mühlen Axelsson, D. Vestergaard Poulsen, M. Scharff, T. Grønthoft, E. Dahlin, D. Chelazzi and P. Baglioni

The use of spectrophotocolorimetry techniques in modern art

S. Omarini

12.05 DISCUSSION

12.25 POSTER VIEWING & EXHIBITION AREA

13.00 LUNCH

SESSION II CHURCHES AND OTHER LARGE OCCASIONALLY USED SPACES – SPECIAL ISSUES

- 14.00 **Adaptive ventilation for occasionally used churches**
P. Klenz Larsen, M. Wessberg, T. Broström
- 14.20 **Relative humidity control in historical buildings allowing the safe natural indoor-climate fluctuations**
T. Vyhliđal, P. Zítek, D. Camuffo, G. Simeunovic, O. Sládek, M. Wessberg
- 14.40 **Fan pressurization method for measuring air leakage in churches. Wind and stack induced uncertainties**
M. Mattsson, M. Sandberg, L. Claesson, S. Lindström, A. Hayati
- 15.00 **Evaluation of two air infiltration models on a church**
A. Hayati, M. Mattsson, M. Sandberg, E. Linden
- Plaster finishes in historical buildings. Measurements of surface structure, roughness parameters and air flow characteristics**
M. Sandberg, A. Sattari, M. Mattsson
- Efficiency of an organ heater and its potential impact on the organ in a church**
C. Bertolin, D. Camuffo, A. della Valle
- Church heating a balancing act between comfort cost and conservation**
A. Troi
- 15.20 DISCUSSION
- 15.40 POSTER VIEWING
and COFFEE BREAK

SESSION III INNOVATIVE MATERIALS, TREATMENTS AND TOOLS IN CONSERVATIONS

- 16.00 **Investigations on former stone conservations at the Kapellenturm, Rottweil**
F. Grüner
- 16.20 **Alkaline earth alkoxides for conservation treatment of stone and wood in built heritage**
M. Favaro, M. Chiurato, P. Tomasin, F. Ossola, N. El Habra, N. Brianese, I. Svensson, E. Beckers, V.J. Forrat Pérez, M.D. Romero Sánchez, G. Oriol, E. Bourguignon, A. Bernardi
- 16.40 **Nanomaterials for the conservation and preservation of historical monuments**
M.L. Ion, R.C. Fierascu, M. Leahu, R.M. Ion, D. Turcanu-Carutiu
- 17.00 **Preliminary assessment of atmospheric plasma torches for cleaning of architectural surfaces**
C. Aibéo, T. Cavallin, E. Egel, M. Favaro, V. Kamenova, L. Nodari, A. Patelli, A. Pavlov, I. Pavlova, O. Schalm, P. Scopece, S. Simon, P. Storme, E. Verga Falzacappa, S. Voltolina
- 17.20 **Assessment of salt crystallization through numerical modelling**
G. Castellazzi, S. de Miranda, L. Grementieri, L. Molari, F. Ubertini
- 17.40 DISCUSSION
- 18.00 END OF 2ND DAY'S PRESENTATIONS

**Cultural programme
& gala dinner**



- 18.00 transport by reserved bus from the front courtyard of EURAC Research to the castle
- 18.20 arrival to the castle parking lot > there is a 10 minutes unpaved trail (50m total altitude gap) from the street to the castle (please wear comfortable shoes)
- 18.30 cocktail on castle court
- 18.45 free guided tour of the castle (in English, 2 or 3 groups)
- 19.30 gala dinner under castle arcades (depending on weather conditions, but please bring something warm)
- 22.30-23.00 transport by reserved bus from castle parking lot back to EURAC Research

2nd day – Workshop

Tuesday, 17th September 2013

SESSION IV ENERGY EFFICIENCY IN HISTORIC BUILDINGS AND DISTRICTS – 3ENCULT CASE STUDIES

- 8.30 Introduction into 3ENCULT project
Alexandra Troi
- 8.40 **Development and demonstration of new systems and technologies for sustainable refurbishment of Europe's built heritage**
A. Bishara, R. Plagge, J. L. Hernández, S. Reeb, G. Paci, H. Garrecht, D. García, E. Gabrielli, C. Colla, B. Krick
- 9.00 **Energetic retrofit of a historic log house on the example of a “Strickbau”**
H. Garrecht, S. Reeb
- 9.20 CS1 – Public Weigh House, Bozen / Bolzano, Italy
CS2 – Palazzo d'Accursio, Bologna, Italy
CS3 – Palazzina della Viola, Bologna, Italy
CS4 – Materials Court, Copenhagen, Denmark
CS5 – Höttinger School, Innsbruck, Austria
CS6 – Schinkelspeicher at Warehouse city Potsdam and others, Germany
CS7 – Industrial Engineering School, Bejar, Spain
- 9.55 DISCUSSION
- 10.10 POSTER VIEWING
and COFFEE BREAK

SESSION V

ENERGY EFFICIENCY IN HISTORIC BUILDINGS AND DISTRICTS – HERITAGE VALUE AND PLANNING APPROACHES

- 10.40 **Energy efficiency and preservation. System thinking in a multiple case study**
H. Norrström
- 11.00 **Identifying cultural building values. Methodology review for energy efficiency alterations**
T. Örn, K.L. Nilsson
- 11.20 **A method for categorization of European historic districts and a multiscale data model for the assessment of energy interventions**
T. Brostrom, A. Bernardi, A. Egusquiza, J. Frick, M. Kahn
- 11.40 **Analysis of built heritage. Energy and culture**
O. Wedebrunn, C. Colla, T. Dahl, C. Franzen
- 12.00 **Integrated strategies for sustainable renovation of early post-war housing: the case of Torpa, a housing area and National Heritage asset in Sweden**
P. Femenías, L. Thuvander, A. Danielsson
- 12.20 **Energy efficiency and restoration in the historic centre of Ferrara, a view between conservation and performance**
K. Ambrogio, M. Zuppiroli
- 12.25 DISCUSSION
- 12.45 PRESENTATION IN EXHIBITION AREA
- 13.15 LUNCH

- 14.10 **High- and low-impact strategies for the internal insulation retrofit of traditional masonry walls**
C. Hermann
- 14.30 **Numerical simulation of thermal performance of window retrofit options for historic buildings**
C. Misiopceki, A. Gustavsen
- 14.50 **Simulation of energy consumption for dehumidification with cooling in National Museum in Kraków**
J. Radon, F. Antretter, A. Sadłowska, M. Łukomski, L. Bratasz
- 15.10 **Sustainable natural ventilation and cooling of museums**
J. Käferhaus
- Protecting historical buildings doesn't mean only to respect their appearance**
V. Pracchi, E. Rosina
- Energy modelling of historic buildings: applicability, problems and compared results**
R.S. Adhikari, E. Lucchi, V. Pracchi
- Conservation compatible insulation on a baroque building**
C. Franzen, M. Zötzl, T. Löther
- „upgrade - stories about people and buildings“**
Carlo Azzolini, Klaus Ausserhofer, Peter Erlacher, Margot Wittig, Rudi Zancan
- Large scale measurement campaign to assess the thermal behaviour of an 18th Century historic building in Athens**
I. Atsonios, I. Mandilaras, D. Kolaitis, E. Tsakanika-Theohari, E. Alexandrou, M. Founti
- Technical Guideline for Energetic Redevelopment of Existing Buildings**
Ilaria M. Brauer
- Development of a highly energy efficient and conservation compatible window**
Mathilde Andre, Franz Freundorfer, Dagmar Exner
- 15.50 DISCUSSION
- 16.10 POSTER VIEWING
and COFFEE BREAK

SESSION VII SMART MONITORING & CONTROL

- 16.30 **A novel monitoring and control system for historical buildings**
J.L. Hernández, S. Reeb, G. Paci, H. Garrecht, D. García
- 16.50 **Monitoring and improvement of indoor environments in cultural heritage**
J. Frick, M. Reichert, G. Baumbach, S. Song, A. Neuwirth, M. Krüger, K. Schmitt, J. Huber, M. Ebermann, L. Pockelé, A. Khanlou, A. Ekonomakou, J. Balau, G.M. Revel, M. Arnesano, F. Pietroni
- 17.10 **On the advance of impedance measurements for monitoring moisture in sandstone**
F. Lehmann, M.I. Martínez Garrido, M. Krüger
- 17.30 DISCUSSION
- 17.50 CLOSURE
- 18.00 END OF 2ND DAY

3rd day – Training

Wednesday, 18th September 2013

MORNING SESSION 9:00 – 12:00

WS1: Innovative Technology for Mitigation of Pollutant Impact for Museums, Archives and Libraries

Coordinators: Elin Marie Dahlin, Terje Grontoft and Karin Drda-Kuehn

Description: The workshop is a practical training session on measurements, mitigation and preventive conservation strategy. It will demonstrate the MEMORI dosimeter technology developed in the EU project MEMORI. The MEMORI technology is an instrument for preventive conservation with the aim of reducing costs to provide long term benefits for cultural heritage collections. The participants will get the opportunity to apply the air quality evaluation methodology developed in MEMORI.

Target audiences: conservators in museums, archives and libraries

WS2: Assessment of the potential for energy improvements in historic buildings: Practice, standards, case studies (3ENCULT, EFFESUS, Spara och bevara, CEN)

Coordinators: Tor Broström, Alexandra Troi

Description: Starting from the experiences in 3ENCULT, EFFESUS and Spara och Bevara and together with representatives from European standardization groups on “Energy Efficiency of Historic Buildings” (CEN TC346 WG8) and “Energy Performance of Buildings (EPBD)” (CEN TC89) , the participants discuss approaches how to best assess the potential for energy retrofit in historic building and how to best guide the development of conservation compatible solution for the specific building

Target audiences: architects, engineers, conservators, Local Authorities, owners of historic building

WS3: Comprehensive diagnosis and multidisciplinary approach for conservation compatible energy retrofit (3ENCULT)

Coordinators: Francesca Roberti, Dagmar Exner

Description: During a visit of the Public Weigh House, a listed medieval building in the historic centre of Bozen/Bolzano and case study of 3ENCULT project, the comprehensive diagnosis performed there within the project – including both heritage and energy related aspects and ranging from the building historians study over IR-thermography and Blower Door Test and Thermal Fluxes to material and construction detail analyses – is explained and practically shown. Moreover, the support of this multidisciplinary diagnosis and following design phase by a further developed Raumbuch is presented.

Target audiences: architects, engineers, conservators

(for more information see the specific programmes)

AFTERNOON SESSION 13:00 to 16:00

WS4: Energy efficiency of the windows in the historic context (3ENCULT)

Coordinators: Mathilde Andre, Dagmar Exner and Franz Freundorfer

Description: The workshop presents a correct procedure for conserving the cultural heritage values and upgrading the energy performance of a historic building – with a focus on windows. First, a visit in the historic center of Bolzano/Bozen permits to show and to compare the esthetical value of old and new windows, glasses and frames. Second, in the beautiful building of the Public Weigh House (case study of the 3ENCULT Project) the solutions developed for conservation compatible highly energy efficient windows – for cases where the original window or has to be) replaced – are presented and discussed. Finally, the participants investigate how the presented solution details can also be used for repairing and enhancing existing windows and how the concepts can be applied in different regional window construction traditions.

Target audiences: architects, engineers, conservators

WS5: Indoor air quality monitoring (CETIEB)

Coordinator: Jürgen Frick

Description: The workshop presents results of the EU-FP7 project CETIEB “Cost-Effective Tools for Better Indoor Environment in Retrofitted Energy Efficient Buildings” (www.cetieb.eu), which aims to develop innovative solutions for better monitoring indoor environment quality and to investigate active and passive systems for improving it. The focus lies on results which are relevant for the use in cultural heritage buildings.

Target audiences: conservation scientists, architects, engineers, conservators

AFTERNOON SESSION 13:00 to 17:00

WS6: NanoMaterials for cultural heritage (NanomeCH cluster)

Coordinator: Adriana Bernardi

Relators: Francesca Becherini, Matteo Chiurato, Monica Favaro, Martin Labouré, Alessandro Patelli, Luc Pockelé, Stefano Voltolina, Rodorico Giorgi

Description: The organization, focus and activities of the “NanomaCH CLUSTER“ will be presented through research developed within two projects of the cluster, namely “NANOMATCH” and “PANNA” currently in progress. In the workshop the application of innovative metal alkoxides products for the conservation treatment of different kind of stones and wood, and of an innovative plasma-torch devoted to the removal of dirt on stone, metal and wall painting substrates will be discussed. The application methodologies, the laboratory tests, the preliminary results, the studies on the impact on human health and environment and the first concepts of application guidelines will be discussed. Finally, the advantages and drawbacks of different commercially available plasma devices and the new plasma-torch during the removal of polymers, graffiti, organic and inorganic dirt will be covered. The market impact and opportunities for the involved SMEs will also be addressed.

Target audiences: scientists in CH, restorers, end users, policy makers in CH , sellers of products for CH, material science/scientists, chemist/chemistry, physic/physics

(for more information see the specific programmes)