



Regional Bureau  
for Science and Culture  
in Europe



Green  
Building  
Council  
Italia



Cheap  GSHPs

Workshop | 11-12-13 dic 2018

# Innovative Energy-Environmental tools for Sustainable Energy Governance in Built Heritage

 Ferrara (Italy)



Castello Estense (Ferrara, Italy):  
Registered for certification with *GBC Historic Building* protocol

In collaboration with:



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“We know that the world has the tools, the technologies and the wealth to address *climate change*, but we must show more determination in moving towards a green, clean, sustainable energy future.”

[Secretary-General's remarks at a press encounter at the UN Headquarters, in New York, 05 Oct 2017]

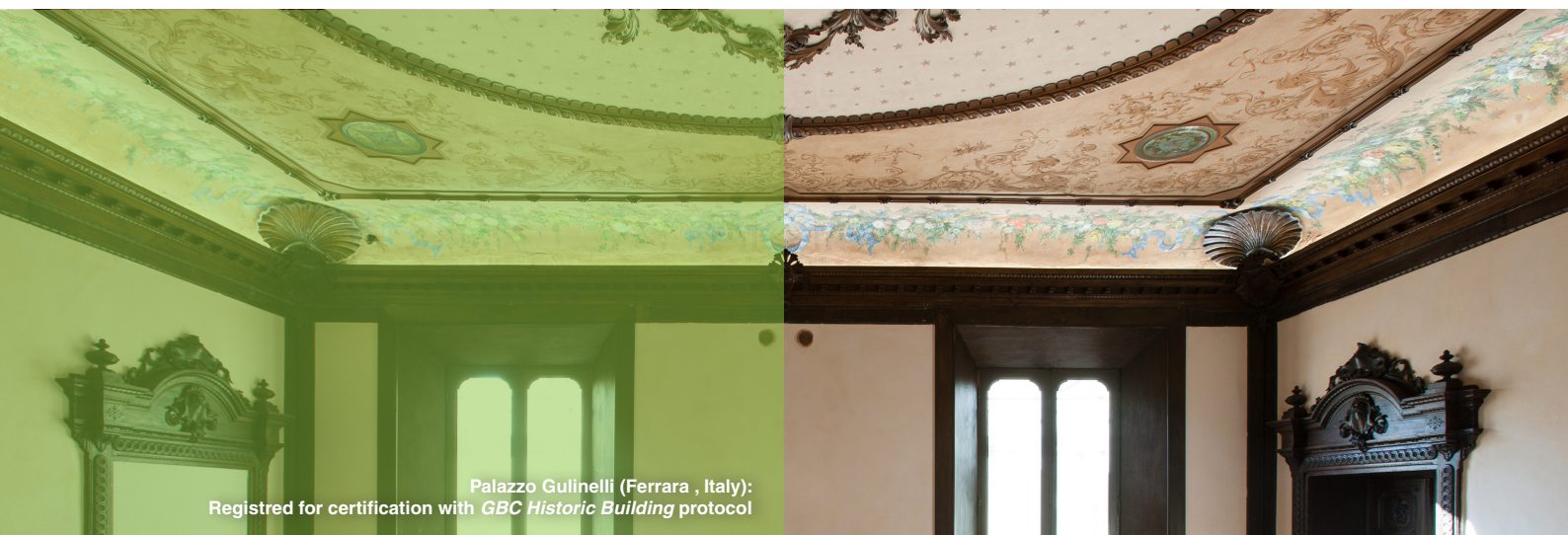
The United Nations have increasingly recognized the energy issue and its environmental impact as a matter of core importance for the achievement of Sustainable Development Goals and a sustainable climate for our planet, declaring the years 2014-2024 as the Decade of Sustainable Energy for All, with the aim to achieve 3 main objectives: to provide universal energy access; to double the rate of global energy efficiency improvement; and, to double the share of renewable energy in the global energy mix.

The **United Nations Climate Change Conference (COP21)** held in December 2015 in Paris represents a benchmark of paramount importance in the international cooperation for a new climate regime. It was the first global event to start a specific round table focused on green building.

## UNESCO

In full consistency with the above, **UNESCO** promotes education and international cooperation on renewable energy since the establishment of the World Solar Commission in 1995 and more recently launched the overarching Climate Change Initiative **RENFORUS** (Renewable Energy Futures for UNESCO Sites) that aims at enhancing and applying the Climate Change knowledge base to building green societies, involving the sustainable use of renewable energy sources in UNESCO designated Sites (World Heritage properties and Biosphere Reserves).

Since 2012, the UNESCO Regional Bureau for Science and Culture in Europe supports specific capacity-building activities for UNESCO designated sites, along with highly demonstrative sustainable energy solutions, applied to historical and monumental buildings. This includes the participation of the Bureau to Research and Innovation projects within the framework of the Horizon 2020 Programme, case in point “Cheap and Efficient Application of reliable Ground Source Heat Exchangers and Pumps” (Cheap-GSHPs) .



Palazzo Gulinelli (Ferrara , Italy):  
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The project aims at reducing the total cost of low enthalpy geothermal systems by improving actual drilling/installation technologies and designs of Ground Source Heat Exchangers. The outcomes are of relevance to further expand the inherent potentiality of shallow geothermal power systems for heating and cooling purposes. The use of the novel heat pumps for higher temperatures developed within the project are capable to reduce the costs in the market for retrofitting buildings, in particular historical ones. Insights from the demo cases of the project involving historical buildings will provide further evidence of the compatibility of such innovative systems with the requirements of preservation and conservation along with the need for a comfortable environment and a decarbonised economy.

## GBC Italia

**Green Building Council (GBC) Italia**, the main green building community in Italy, member of the World Green Building Council (**WorldGBC**) and partner of the United States Green Building Council (**USGBC**), made an extensive contribution to the development of a new culture merging heritage and sustainability with the first national energy-environmental protocol, **GBC Historic Building™**, and defined the first standard focused for traditional and historic buildings.

LEED® Italia 2009 rating systems for New Construction and Major Renovation has been recently revised to include historical buildings, thanks to the contribution of GBC Italia. Such a tool characterised by an inclusive and participated development process, is now able to address the needs of built heritage by in relation to their restoration and preservation requirements. The current **GBC Historic Building™**, is a new rating system that offers the opportunity to combine framework and criteria of the International LEED® standards and the specific knowledge of the restoration and preservation, both theory and practice. The case study highlights possible modifications and integrations of the existing LEED®/GBC topics with the ultimate purpose of bridging the gap between energy efficiency, environmental sustainability and cultural heritage preservation.

The present workshop intends to provide evidence on how the preservation of the integrity and authenticity of our built cultural heritage may be hand in glove with a more sustainable and efficient use of energy and environmental requirements, including the application of renewable sources - whenever applicable. In this sense, UNESCO designated sites such as Ferrara , have the potential to perform as laboratories for the development of good practices to test and uptake innovative solutions and ideas, inspiring shifts in policies, planning and technology being inspirational beyond their our boundaries to a world-wide scale.

## Ferrara

**Ferrara**, city of the Renaissance, was inscribed in 1995 on the World Heritage list as a *“marvellous example of a city designed in the Renaissance, which preserves its historical centre intact and which expresses canons of urban planning that have had a profound influence for the development of urbanism in the following centuries”*. In 1999, the recognition was extended to the territory of the Po Delta and to the Este Delights, which illustrate the influence of Renaissance culture on a natural landscape, preserving its original form. The implant of that ancient design, legible in the landscape and witness of the uninterrupted work of man, has in fact maintained, as in few other places in the world, the subtle balance between earth and water. Therefore, the World Heritage recognition contextualizes Ferrara, in a meaningful and coherent way, in the territory in which it stands, identifying a cultural unit where the monumental emergencies and the natural elements are motivated reciprocally.

## Scientific Committee

- Marco Mari, *GBC Italia*
- Roberta Fusari, *City of Ferrara*
- Jonathan Baker, *UNESCO Regional Bureau for Science and Culture in Europe - SC Unit*
- Davide Poletto, *UNESCO Regional Bureau for Science and Culture in Europe - SC Unit*
- Matteo Rosati, *UNESCO Regional Bureau for Science and Culture in Europe - CLT Unit*
- Angela Ugatti, *Province of Ferrara*
- Simonetta Della Seta, *MEIS*
- Cristiano Ferrari, *Gulinelli Foundation*
- Silvia Paparella, *Ferrara Convention Fairs - RemTech Expo*
- Adriana Bernardi, *CNR-ISAC (Padova)*
- Michele De Carli, *Department of Industrial engineering of the University of Padua*
- Giuseppe Emmi, *Department of Industrial engineering of the University of Padua*
- Luc Pockelé, *R.E.D. Srl*
- Fabio Poletto, *Hiref Spa*

## 3-days event

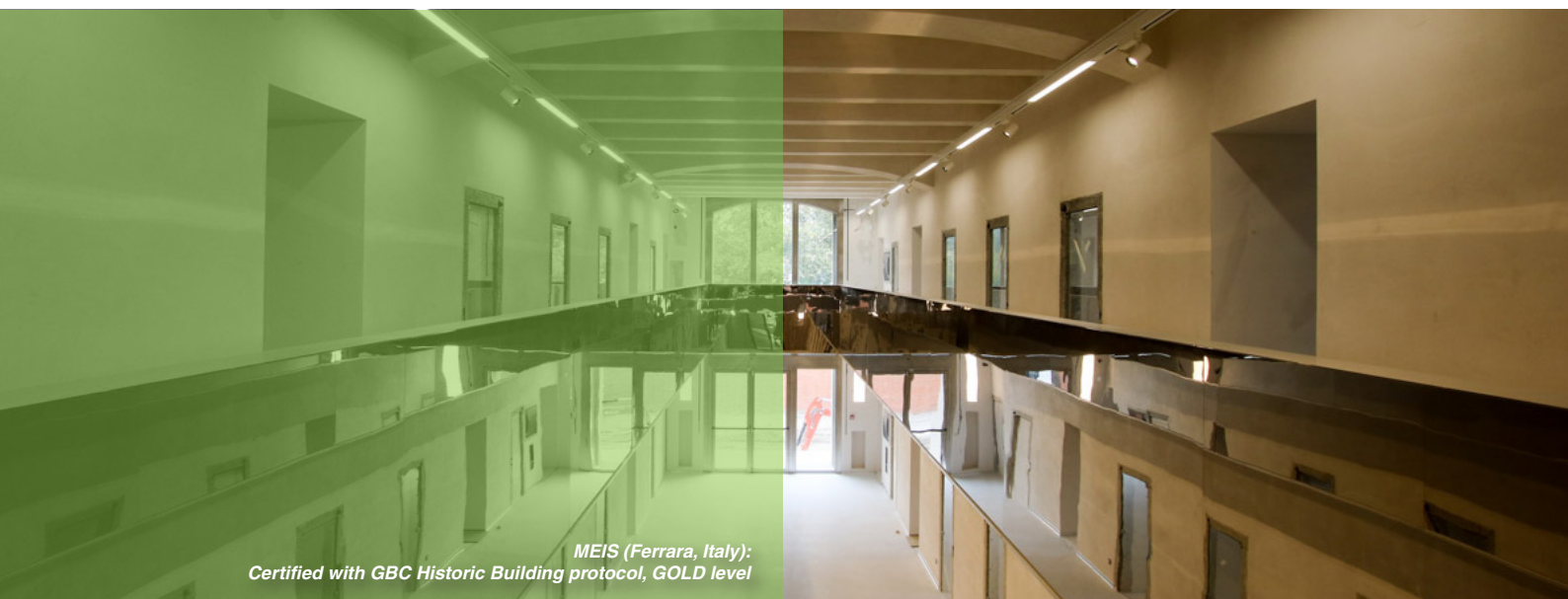
The 3-day event will be held in **Ferrara**. It is structured in **3 sessions encompassing**: (i) a case-based introduction on sustainable energy governance principles and practices; (ii) presentation of the most advanced and innovative shallow geothermal solutions applied to historical buildings (EU project Cheap-GSHPs) along with a specific Decision Support System (DSS) software tool, to be interactively tested; (iii) a highlight of the best state of art environmental and energy certification for historical buildings based on GBC Historic Building™, protocol along with a guided infield visit to certified historical buildings of Ferrara:

## Goals

- The architectural restoration of the former prison of Ferrara, converted with a public project in the National Museum of Italian Judaism and the Shoah (MEIS).
- Palazzo Gulinelli (an important building complex dating back to the 14th century, damaged by the seismic events of May 2012, which has undertaken a consolidation and restoration process. The building hosts a school.
- The Castello Estense of Ferrara, as one of the most iconic heritage assets of the city.
- Offer technical support to local-central heritage authorities, site planners and managers, heritage practitioners and researchers with applied interest on sustainable energy-environmental governance issues;
- Raise awareness and develop capacities on renewable energy and energy efficiency promotion by means European project results (Cheap-GSHPs, CityEnGov)
- Strengthen the dissemination of information and know how on sustainable energy potentials for UNESCO designated sites and cultural heritage in general;
- Promoting the interface between Public-Private actors and the adoption of an interdisciplinary approach for enhancing innovation and management capacity in sustainability for cultural heritage.
- Strengthen the international dissemination of GBC Historic Building™, as an energy-environmental rating system bridging the gap between energy efficiency, environmental sustainability and cultural heritage preservation.

## Targets

With its interdisciplinary approach, the workshop targets conservators, heritage managers and practitioners, green building and construction chain-industry professionals, that are asked to master new capacities and knowledge on how energy-environmental issues and compatible renewable energy solutions, based on a mix of existing and new technologies, can be compatible with heritage values and functional to their preservation.



MEIS (Ferrara, Italy):  
Certified with GBC Historic Building protocol, GOLD level

Workshop

# Innovative Energy- Environmental tools for Sustainable Energy Governance in built Cultural Heritage

# DAY 1

Ferrara, 11 dicembre  
Imbarcadereo, Castello Estense



Event in accreditation at



Room with limited seats.  
To reserve your seat write to:  
Simona Campana  
[secretariat@remtechexpo.com](mailto:secretariat@remtechexpo.com)

9.00	Registration at the <b>Imbarcadereo, Castello Estense</b>
<b>I Session</b>	<b>Introduction to Sustainable Energy Governance in Cultural Heritage</b>
9.30	Welcoming speeches (UNESCO - Cheap-GSHPs project - GBC Italia)
9.45	Sustainable Energy Governance and UNESCO: an introduction to the Training workshop (D. Poletto, <i>UNESCO Regional Bureau for Science and Culture in Europe - SC Unit</i> )
10.00	Introduction of Participants
10.15	Building frameworks for energy action in World Heritage sites: lessons learnt from Edinburgh (C. Ronchini, <i>RIBA RIAS Historic Environment Scotland</i> )
10.45	Discussion
11.00	Coffee Break
<b>II Session</b>	<b>Sustainable Energy Technology - Innovative Shallow geothermal facilities for Cultural Heritage: The EU Project Cheap-GSHPs</b>
11.15	Sustainable Energy for Cultural Heritage: an overview of the H2020 Cheap-GSHPs project experience. (A. Bernardi, <i>CNR ISAC - Coordinator of Cheap-GSHPs</i> )
11.30	Innovating shallow geothermal power systems through Cheap-GSHPs: applied technology in demo case for built heritage (L. Pockelé, <i>R.E.D. Srl - partner of Cheap-GSHPs</i> )
12.00	Insights from the Technical Museum Nikola Tesla in Zagreb: performing a two stages heat pump prototype (F. Poletto, <i>Hiref - partner of Cheap-GSHPs</i> )
12.30	Discussion
12.45	Lunch - Buffet
<b>III Session</b>	<b>Sustainable Energy-environmental Tools - Decision Support System: description and training</b>
14.00	Cheap-GSHPs DSS (Decision Support System) for shallow geothermal facilities: introduction and interactive demonstration (M. De Carli, <i>Department of Industrial engineering of the University of Padua - Cheap-GSHPs team</i> )
15.30	Discussion
15.45	Coffee Break
16.00	Ferrara energy dashboard – a tool meant to support the decision making process (City of Ferrara)
17.00	Discussion and end of day



*Project Cheap-GSHPs: Prototype of Heat Pump at the Technical Museum Nikola Tesla – Zagreb (Croatia)*



Workshop

# Innovative Energy- Environmental tools for Sustainable Energy Governance in built Cultural Heritage

# DAY 2

Ferrara, 12 dicembre  
Sala dell'Arengo, Palazzo Ducale  
Piazza Municipale

Event in accreditation at



Ordine Degli Architetti P.P.C.  
Della Provincia Di Ferrara



Collegio Provinciale  
Geometri e Geometri Laureati  
di Ferrara



Fondazione  
Geometri  
Ferraresi



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9.00	Registration at the Sala dell'Arengo, Palazzo Ducale
<b>V Session</b>	<b>Sustainable Energy-environmental Tools: Green building Certification for Built Heritage</b>
9.30	GBC Historic Building™, narratives for sustainability in cultural heritage (M. Mari, <i>GBC Italia</i> )
10.15	The structure of the GBC Historic Building™ energy-environmental protocol (P. M. Davoli, <i>Ferrara University - Architecture Department</i> )
11.00	Coffee Break
<b>VI Session</b>	<b>Green building Certification for Built Heritage: first international experience</b>
11.15	<ul style="list-style-type: none"> <li>• Oficina del Historiador de L'Habana Vieja (OHcH), Cuba - GBC Historic Building Case Study</li> </ul> discussant: GBC Italia and Assorestaurò
12.15	Lunch - Buffet
<b>VII Session</b>	<b>Green building Certification for Built Heritage: the national experience</b>
13.15	<p><i>LEED experiences:</i></p> <ul style="list-style-type: none"> <li>• Palazzo Ricordi, Milano - Certified with LEED C&amp;S protocol</li> <li>• Cà Foscari, Venezia - Certified with LEED EBOM protocol</li> </ul> discussant: F. Peron, <i>University IUAV</i>
	<p><i>GBC Historic Building Case Study experiences:</i></p> <ul style="list-style-type: none"> <li>• Greeneria, Guarene (CN) – Case Study on a rural building</li> <li>• Compagnia San Paolo Torino – Case Study on office building (TBC)</li> </ul> discussant: M. Lavagna (TBC), <i>Polytechnic University of Milan – ABC Department</i>
16.15	Coffee break
16.30	<p><i>GBC Historic Building Registered building:</i></p> <ul style="list-style-type: none"> <li>• Palazzo Santander, Torino (TBC)</li> <li>• Ospedale Sant'Agostino di Modena</li> </ul> discussant: A. Boeri, <i>University of Bologna - Architecture Department</i>
	<p><i>GBC Historic Building Certified building:</i></p> <ul style="list-style-type: none"> <li>• ex scuderie del Monastero benedettino della Rocca di Sant'Apollinare, Perugia (PG) – Certified with GBC Historic Building™ GOLD level</li> </ul> discussant: F. Cotana, <i>University of Perugia</i>
	<p><i>Green building Certification for Built Heritage:</i></p> <ul style="list-style-type: none"> <li>• Emilio Romagna Region point of view</li> </ul> discussant: GBC Italia Chapter Emilia Romagna; P. Ferrecchi, <i>Regione Emilia Romagna - Direzione generale cura del territorio e dell'ambiente</i>
<b>VIII Session</b>	<b>Announcements and Agreements</b>
18.30	M. Mari, <i>GBC Italia</i> M. Balzani, <i>Clust-ER Edilizia e Costruzioni</i>
19.00	Second day closing



Palazzo Ricordi (Milano, Italy):  
Certified with LEED Core&Shell, GOLD level

Workshop

# Innovative Energy- Environmental tools for Sustainable Energy Governance in built Cultural Heritage

# DAY 3

Ferrara, 13 dicembre  
Sala dei Comuni, Castello Estense

Event in accreditation at



Ordine Degli Architetti P.P.C.  
Della Provincia Di Ferrara



Collegio Provinciale  
Geometri e Geometri Laureati  
di Ferrara



Fondazione  
Geometri  
Ferraresi



Consiglio Nazionale dei Geologi



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Castello Estense (Ferrara, Italy):  
Registered for certification with  
GBC Historic Building™ protocol

9.00		Registration at Sala dei Comuni, Castello Estense
<b>IX Session</b>		<b>Heritage and Sustainability: Promoting the interface between Public-Private actors and the adoption of a new interdisciplinary approach for enhancing innovation and territories economic impact</b>
9.30		Welcoming speeches - City of Ferrara - UNESCO - GBC Italia
10.15		Building a new sustainability culture in building urban regeneration - G. Dall'Ò, <i>President GBC Italia</i> - USGBC Speaker - World GBC Speaker
11.15		Coffee Break
11.30		<b>ROUND TABLE</b> moderated by M. Mari <i>Vice President GBC Italia</i>
		- Environment protection and building impacts, starting a new sustainable culture (A. Bratti, <i>ISPRA</i> ) - Heritage and sustainability, the importance of merging cultural and environmental issues (F. Scoppola, <i>Minister of Cultural Heritage, MiBAC</i> ) - Heritage and sustainability, the importance of training (C. Di Francesco <i>School of Cultural Heritage and Tourism, MiBAC</i> ) - The Italian path to Green Public Procurement (S. Falocco, <i>Fondazione Ecosistem</i> ) - The potential impacts of sustainable energy measures on the authenticity and integrity of urban World Heritage Sites in Europe - The Italian culture of restoration and the partnership with GBC Italia (A. Bozzetti, <i>Assorestauro</i> ) - GBC Historic Building Certification Best Practices (D. Disegni, <i>MEIS Foundation</i> , - Mons. A. Grandini, <i>Canonici Mattei Foundation</i> ) - Ferrara, a meaningful and coherent international example of cultural and sustainable emergencies (R. Fusari, <i>Ferrara Municipality</i> )
<b>X Session</b>		<b>Announcements and Agreements</b>
12.30		G. Dall'Ò, M. Mari, <i>GBC Italia</i> A. Bratti, <i>ISPRA</i> F. Scoppola, <i>Minister of Cultural Heritage (MiBAC)</i> F. Parisini, S. Paparella, <i>Salone del Restauro-Ferrara Fiere Congressi</i> A. Ugatti, <i>Provincia di Ferrara</i> N. Frasson, <i>Dirigente Servizio Beni Monumentali - Centro Storico Comune di Ferrara</i>
13.30		Light lunch
<b>XI Session</b>		<b>GBC Historic Building protocol certification in Ferrara buildings</b>
14.30		<b>Field visit to MEIS Building</b> - D. Disegni, <i>President MEIS Foundation</i> - S. Della Seta, <i>Director MEIS Foundation</i>
		Technical support by COAF srl, Edilfrair spa - M. Irti - A. Valentini, <i>GBC Historic Building™ Accredited Professional</i>
		Certification award ceremony
16.30		<b>Field visit to Gulinelli Building</b> - Mons. G. Perego, <i>Bishop of Ferrara</i> - Mons. A. Grandini, <i>Canonici Mattei Foundation</i> - A. Artioli, <i>Canonici Mattei Foundation</i>
		Technical support by Binario Lab srl - C. Ferrari - E. Artioli
		Certification award ceremony
18.30		Farewell cocktail

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**📍 Ferrara (Italy)**



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