

IEA-SHC TASK59: FACT SHEET

Multidisciplinary planning process:

Enhancing the use of the European standard EN 16883:2017

LITERATURE

This is part of a series of fact sheets meant to facilitate and enhance the use of the European standard EN 16883:2017 Conservation of cultural heritage – Guidelines for improving the energy performance of historic buildings.

This particular fact sheet presents literature that provides extended background and more in depth knowledge for the different parts of the standard.

Contributors:

Alessia Buda
Politecnico di Milano
(Italy)

Tor Broström
Uppsala University
(Sweden)

Initiating the process, building survey and assessment

Name	Short description	How it can be useful
M. de La Torre, 2002. Assessing the values of cultural heritage: Research report: Getty Conservation Institute.	Report on values and economics of cultural heritage. It address these issues by focusing on methods of identifying, articulating, and establishing cultural significance.	Heritage Value Assessment
Muños Vinãs S., 2005. Contemporary theory of conservation, Oxfors, Elsevier.	A text book on theory of conservation	General background
English Heritage, 2013. Practical Building Conservation. Conservation Basics, Ashgate Publishing Limited.	Reviews the history and evolution of building conservation, explaining the philosophical and legal frameworks that exist today, and considering possible future developments.	Conservation principles and practices
English Heritage, 2014. Practical Building Conservation. Building Environment, Ashgate Publishing Limited.	Looks at the interaction between building materials and systems and their surroundings and how this may lead to deterioration, outlining the evolution of building envelope design and environmental control systems	Energy and Environmental Principles and practices
Suhr M., Hunt R., 2013. Old House Eco Handbook: A practical guide to retrofitting for energy efficiency & sustainability, Frances Lincoln Limited.	A guide for homeowners about how to make medieval and timber framed, Georgian, Victorian or Edwardian terraces energy-efficient and sustainable.	Introduction to a sustainability approach for homeowners.
Mileto C., Vegas F., Garcia L., Cristini V., 2015. Vernacular Architecture. Towards a Sustainable Future, CRC Press.	Investigations of the sustainability in vernacular buildings.	Provides an overview on vernacular architecture characteristics and retrofit case studies.
Kennedy W., Turner W. C., Caperhart B., 1994. Guide to Energy Management, CRC Press Taylor & Francis Group.	This book presents an overview on energy management.	Energy audit.
Engel Purcell C., 2018. Deep Energy Renovation of Traditional Buildings: Addressing Knowledge Gaps and Skills Training in Ireland. Project Report. Heritage Council / ICOMOS Ireland.	Review on the current state of knowledge and risks relating to the deep energy renovation of traditional buildings in Ireland.	Theory and references.
Williamson J., Stinson J., 2015. Monitoring thermal upgrades to ten traditional properties, Technical Paper 19 Historic Scotland.	Methods for pre- and post-intervention hygrothermal monitoring work-	Hygrothermal monitoring of walls, roofs, floors, windows.
Baker P., 2011. U-values and traditional buildings: in situ measurements and their comparisons to calculated values. Edinburgh, Historic Scotland.	Provides the results of a thermal performance study of traditional building elements and comparison with calculated U-values.	Thermal performance monitoring of walls, roofs, floors, windows.
Bianchi F, Pisello A, Baldinelli G, Asdrubali F, Bianchi F, Pisello A., 2014. Infrared Thermography Assessment of Thermal Bridges in Building Envelope: Experimental Validation in a Test Room Setup. Sustainability, 6:7107–20.	In situ measurements were carried out with the purpose of evaluating the energy losses through the envelope of a test room.	Infrared Thermography for Thermal bridges detection
Roberti F, Oberegger UF, Gasparella A. 2015. Calibrating historic building energy models to hourly indoor air and surface temperatures: Methodology and case study. Energy Build, 108:236–43.	A method for calibrating a historic building simulation model. A sensitivity analysis to identify parameters affecting the calibration is done.	Energy model calibration on air and surface temperatures.

Camuffo D., 2014. Microclimate for Cultural Heritage: Conservation, Restoration, and Maintenance of Indoor and Outdoor Monuments, Elsevier Science.	A text book that presents in depth information on indoor microclimate and cultural heritage.	Covers instruments and methods for practical applications to help readers understand, to observe and interpret observations, and avoid errors. Microclimate investigation / Building monitoring
Roberti F, Oberegger UF, Gasparella A. 2015. Calibrating historic building energy models to hourly indoor air and surface temperatures: Methodology and case study. Energy Build, 108:236–43.	A method for calibrating a historic building simulation model. A sensitivity analysis to identify parameters affecting the calibration is done.	Energy model calibration on air and surface temperatures.
Selection of measures		
Webb A., 2017. Energy retrofits in historic and traditional buildings: A review of problems and methods, Renewable and Sustainable Energy Reviews 77:748-759.	This article reviews the criteria, analysis methods, and decision-making processes used to assess energy retrofits in historic and traditional buildings.	Review on retrofit criteria
Troi A., Bastian Z., 2015. Energy Efficiency solutions for historic buildings: a handbook, Birkhäuser, Basel.	This handbook summarizes the principles of energy retrofitting historic buildings, from the first diagnosis to the adequately designed intervention: preservation of the historic structure, user comfort, and energy efficiency.	Criteria and selection of measures
Historic England, 2018. Energy Efficiency and Historic Buildings. How to Improve Energy Efficiency.	This guidance describes the key stages of improving energy efficiency in historic buildings.	Criteria and selection of measures
Historic Scotland Technical papers: <ul style="list-style-type: none"> • Technical Paper 1 Thermal Performance of Traditional Windows • Technical Paper 2 In situ U-value Measurements in Traditional Buildings • Technical Paper 6 Indoor Air Quality and Energy Efficiency in Traditional Buildings • Technical Paper 9 Slim-profile double glazing • Technical Paper 10 U-values and Traditional Buildings • Technical Paper 12 Indoor Environmental Quality in Refurbishment 	This collection of technical papers provides a support the choice of retrofit measures.	Selection of measures

Project structure

The project consists of four work packages called “Subtasks”

Subtask B > Multidisciplinary planning process

led by Uppsala University, Sweden

Investigate how existing guidelines for improving the energy performance of historic buildings can be enhanced and complemented in order to better meet the needs of the end user by providing an integrated design platform

Organizational details

Full project title

Deep Renovation of Historic Buildings Towards Lowest Possible Energy Demand and CO₂ Emission (NZEB)

Project sponsor

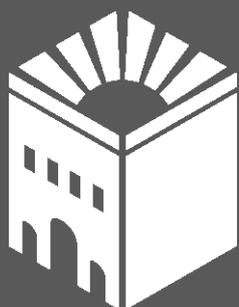
International Energy Agency's
> Solar Heating & Cooling Programme (SHC) Task 59
> Energy in Buildings and Communities (ECB) Annex 76

Duration

September 2017 – February 2021

Operating Agent

Alexandra Troi
Institute for Renewable Energy
EURAC Research
Via Volta 13/A
I-39100 Bolzano / Bozen
Italy



Connect with us

 <http://task59.iea-shc.org>

 <http://annex76.iea-ebc.org>

 task59@eurac.edu

 www.facebook.com/HistoricNZEB

 www.twitter.com/HistoricNZEB