3encult

EFFICIENT ENERGY FOR EU CULTURAL HERITAGE

Executive Summary

Challenges

3ENCULT **bridges the gap** between **conservation** of historic buildings and **climate protection**. Historic buildings are the trademark of numerous European towns and will only survive if **maintained as a living space**. Energy efficient retrofit is important – both for improving the comfort and reducing energy demand (in terms of money and in terms of resources) and for structural protection in heritage buildings.

3ENCULT demonstrates that it is feasible to reduce the energy demand also in historic buildings to 1/4 or even 1/10, depending on the case and the heritage value.

Main features of the project

A core element in 3ENCULT was the **multidisciplinary** team, who elaborated a comprehensive refurbishment strategy for historic buildings: tools for the diagnosis, passive and active retrofit solutions as well as monitoring and control devices.

The results are demonstrated at **8 case studies** and transferred into building practice via diverse channels, including **advice to CEN**, **virtual library** on buildup.eu and a **handbook** with guideline for planners as well as targeted information and **training material** for education and industry, but also **study tours**, **workshops** and **e-guidelines** for local governments and decision makers and last but not least information for building owners and a wide audience through **web** and **TV**.

Results

There is **no "one-fits-all"-solution** – too unique is each historic building. The project rather proposes a "pool" of solutions and guidance how to find the right one for the specific building:

- a highly energy-efficient conservation-compatible **window**
- improved capillary active internal **insulation**
- a low impact **ventilation** based on active overflow principle
- a LED wall washer for high quality and low impact **illumination** (e.g. in museums)
- integrated **PV** solution and guideline on **RES integration** in Historic Buildings
- the **web-based "roombook"** integrating conservation and energy aspects supporting the multidisciplinary diagnosis and design
- **wireless sensor** networks and a **BMS** system dedicated to Historic Buildings
- adaptation of **PHPP** and integration of historic buildings in **EnerPHIT** certification

As regards the impact: 14% of EU building stock dates before 1919, 26% before 1945 – and even if only part of it is listed, most of it constitutes our built heritage and should be treated with care. Reducing its energy demand (~855 TWh) by 75% will result in more than 180 Mt CO2 saved (3.6% of EU-27 emissions in 1990).

For more information, please consult the project website www.3encult.eu

Partnership

Coordinator – EURAC research, Italy. Austria: Bartenbach Lichtlabor, University of Innsbruck. Belgium: REHVA, youris.com. Czech Republic: ATREA. Denmark: Royal Danish Academy of Fine Arts. France: Menuiserie André. Germany: ICLEI, IDK, Passivhaus Institut, Remmers, Technical University of Dresden, University of Stuttgart. Italy: Artemis, Municipality of Bologna, University of Bologna. Netherlands: TNO. Spain: CARTIF, Grupo Unisolar. United Kingdom: ARUP.

SEVENTH FRAMEWORK PROGRAMME

EUROPEAN COMMISSION DG research

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