Inspiration through successful case studies

IEA SHC Task 59 / EBC Annex 76

Case study database

Walter Hüttler, e7 energy innovation & engineering
Webinar, 28 Jan 2020
Historic buildings?

“Historic buildings” according EN 16883 all buildings with elements “worthy of preservation” -> all types & ages, not just listed/protected buildings

Renovating toward NZEB by bringing together architectural design, energy efficiency and local use of renewable energy
Case studies Timeline
Period of the construction, timeline; Interim status: Sept. 2019

- **Rainhof**
- **Basilica di Santa Maria di Collemaggio**
- **Mercado del Val, Valladolid**
- **Villa Catelli**
- **Lichtmayrgütl in Graming**
- **Beim Jäger**
- **Klitgaard**
- **Klostergebäude Kaiserstrasse**
- **Osramhuset (The Osram Building)**

Timeline:
- **before 1600**
- **1600-1700**
- **1850-1899**
- **1900-1944**
- **1945-1959**
INSPIRATION
to trigger the demand

Focus on browsing experience

Visual information as a mean to reach end-users

Short and narrative texts, “magazine style”

Dynamic layout compatible with different screens: mobile, laptop, large screens
LEARNING
from the experience

A first level of data including enough information to describe the intervention:

• Basic contact details
• Short summary
• Images and plans
• General description of
  o building
  o aim
  o solutions
Klostergebäude Kaiserstrasse
Kaiserstrasse 7
1020
Wien/Vienna
Austria

A multi-purpose used convent building in the heart of Vienna has been refurbished with particular attention to monument preservation and to a new solution for renovating Viennese-type box windows.

 DETAILS
for a deeper understanding

Second level of detail data and information:

• Contact details (including all agents involved)
• Context: full explanation
• Solutions: technical details and drawings
• Evaluation: Results and available data
DETAILS
for a deeper understanding

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RENOVATING HISTORIC BUILDINGS TOWARDS ZERO ENERGY

www.iea-shc.org

EXTERNAL WALLS

The existing facade was made of ceramic clinker tiles. Conservation measures such as substance-saving cleaning and repair of the facing brick surfaces, supplementing the historical clinker tiles and hydroprophobing were made. The ceramic statue in the wall niche of the southern ornamental gable has been restored. The circular sandstone slabs, sandstone cross ornaments and sandstone coverings on the eastern and southern ornamental gables were cleaned, repaired and color-matched. Articulated facades and profiled plaster surfaces, such as cornices, window casings, window roofs and ornamented roof gable incl. figural representations were repaired and restored as follows: - Manual removal of various later lime-cement coating - Surface cleaning, mechanical manual exposure of various decorative elements - Stabilisation of the sanding surface, closing of cracks - Plaster additions with cement-free natural hydraulic finished products

Paint systems were used in consultation with the Federal Monuments Authority Austria according to the following procedure: - Etching the facade - Pore-filling lime mud for closing cracks and small bumps - Double silicate glass topcoat

U-value (pre-intervention) (W/m²K):
0.917 W/m²K

U-value (post-intervention) (W/m²K):
0.444 W/m²K

WINDOWS

The outer wings of the box windows in listed facades were renovated and on the inside a new wooden window with special interior insulation was added. The solution sets the new inner wing completely flush with the inner wall and improves the thermal situation through internal insulation and reveal insulation. The sunshades are positioned between the wings in the lintel in existing roller blind niches. This layout represents a novel solution for old buildings.

Some parts of the window were maintained (e.g. frame)
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DETAILS
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<table>
<thead>
<tr>
<th>Energy Efficiency</th>
<th>Internal Climate</th>
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</thead>
<tbody>
<tr>
<td>ENERGY PERFORMANCE</td>
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</tr>
<tr>
<td>ENERGY USE</td>
<td></td>
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<tr>
<td>MEASURED PARAMETERS</td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Costs</th>
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<tbody>
<tr>
<td>INVESTMENT COSTS</td>
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<tr>
<td>RUNNING COSTS</td>
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Footer Navigation title
- Contact
- Privacy
- Impressum

Footer second column title
Brennerstraße 16B, 39100 Bozen, Montag - Freitag von 8:00 bis 17:00
DETAILS
for a deeper understanding

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Discover some similar historic buildings
CONNECTIVITY
Combining efforts - Linking online resources

100+ examples

National platforms?

www.iea-shc.org
DO YOU KNOW A GOOD EXAMPLE?
GET IN TOUCH!
Task59@eurac.edu
Knowledge Base
Selection criteria for case studies

- Renovation of whole building
- Significant reduction of energy consumption (“better than business as usual”)
- Project has been implemented
- Heritage value assessed and respected
- Documentation of technical solutions & monitoring data (energy/costs) available
### Overview on case studies

**Interim status, Sept. 2019**

<table>
<thead>
<tr>
<th>Project</th>
<th>City</th>
<th>Country</th>
<th>Period of construction</th>
<th>Building use</th>
<th>Building area</th>
<th>Protection level</th>
<th>Intervention</th>
<th>Construction details</th>
<th>HVAC</th>
<th>Renewable energy sources</th>
<th>Evaluation / Monitoring data</th>
<th>BGF</th>
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<tbody>
<tr>
<td>Osramhuset (The Osram Building)</td>
<td>Copenhagen</td>
<td>DK</td>
<td>1945-1959</td>
<td>Residential (urban)</td>
<td>Small (Area)</td>
<td>plan</td>
<td>plan</td>
<td>plan</td>
<td>plan</td>
<td>plan</td>
<td>plan</td>
<td>824,0 m²</td>
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<tr>
<td>Rainhof</td>
<td>Gries</td>
<td>IT</td>
<td>before 1600</td>
<td>Residential (rural)</td>
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<td>plan</td>
<td>plan</td>
<td>plan</td>
<td>plan</td>
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<tr>
<td>Villa Castelli</td>
<td>Bellano</td>
<td>IT</td>
<td>1850-1899</td>
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<td>2 140,5 m²</td>
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<td>Basilica di Santa Maria di Collemaggio</td>
<td>L’Aquila</td>
<td>IT</td>
<td>before 1600</td>
<td>Residential (rural)</td>
<td>plan</td>
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<td>Residential (rural)</td>
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<td>plan</td>
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<td>412,2 m²</td>
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<tr>
<td>Notarjeva vila</td>
<td>Tolmin</td>
<td>SLO</td>
<td>1900-1944</td>
<td>Residential (urban)</td>
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<td>plan</td>
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<td>300,0 m²</td>
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<td>Hof 6, Schwarzenberg, Vorarlberg, Austria</td>
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<td>AT</td>
<td>1600-1700</td>
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<td>plan</td>
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<td>3 936,0 m²</td>
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