Presentation of the demo site in Chorzów (Poland)
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# Demo site in Poland – Historical building

<table>
<thead>
<tr>
<th>Location</th>
<th>Chorzów, Poland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface – conditioned</td>
<td>1000 [m²]</td>
</tr>
<tr>
<td>Year of construction</td>
<td>1902</td>
</tr>
<tr>
<td>Type</td>
<td>Residential</td>
</tr>
<tr>
<td>Users</td>
<td>60</td>
</tr>
<tr>
<td>Apartments</td>
<td>12</td>
</tr>
<tr>
<td>Commercial zones</td>
<td>3</td>
</tr>
<tr>
<td>Main heat and DHW sources</td>
<td>Gas boilers</td>
</tr>
</tbody>
</table>
Heat4COOL project has received funding from the European Union’s Horizon 2020 research and innovation program under grant agreement No 723925

HVAC systems in the building

1. GAS SH + DHW

2. GAS SH + ELEC. DHW

3. ELEC. SH + DHW

4. ELEC. DHW + COAL SH
Heat4Cool project implementation

Implemented technologies:

• 30 kW air to water heat pump;

• 8 PCM heat batteries for hot water preparation – each of 12 kWh capacity, 96 kWh in total;

• PV system on the roof of the building – 43 LG 340N1K-V5 PV modules and 15 kW SolarEdge inverter.
Space heating system

- The main source of the heating power – gas boilers.
- 3-way valves with actuators before the heat exchangers
- Independent work of the circulation pumps and the boilers in apartments.
- Connection of the apartment’s installation and the heat pump circuit via heat exchanger.
- Heat pump supply temperature 55-60°C.
Space heating system
Hot water preheating system

- 8 PCM heat batteries installed in the basement for hot water needs.
- Average DHW temperature around 41°C.
- Heat batteries charging controlled by Siemens controller based on temperatures.
Heat pump installation

- The 30 kW heat pump is one unit device for outdoor use.
- Concrete foundation with gravel filling and perforated pipe.
- Connection to the building with pre-insulated PEX pipes in the ground.
PV system

- 43 LG 340N1K-V5 modules are installed with angle of 36.6°.
- Total generation power of the installation is 14.62 kWp.
- 15 kW SolarEdge inverter is installed and connected to the Internet and the monitoring platform.
- 2-way electricity meter is installed by the energy supplier.
The system is monitored and controlled by BMS created for the building. It collects data from meters and send it to the data base.

ZWave sensors in apartments (radiators’ FIBARO thermostats and humidity-temperature-motion AEOTEC MULTISENSOR) are a part of Self-Correcting Intelligent Building Energy Management System (SCI-BEMS).

Tenants’ availability of control:
• Thermostats in apartments,
• Boilers.
Complete system in Chorzów
Thank you.

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