PROJECT SUMMARY
In Backa outside Göteborg, the public housing company Poseidon has been renovating their apartments, built in the 70s. Now the renovation process will continue but with very energy efficient solutions, first in a demonstration project.

SPECIAL FEATURES
Great duplication potential with many similar buildings in the area.

ARCHITECT
Pyramiden Arkitekter AB

OWNER
Bostads AB Poseidon

Apartment buildings Backa Röd in Göteborg SE
BACKGROUND

The public housing company Bostads AB Poseidon has been renovating its building stock continuously during the last years. The company aims to build and renovate buildings to be very energy efficient and climate neutral. Accordingly, their upcoming renovation project has energy issues as a major focus. The building presented here, built in 1971, needs major renovation. Experiences within the company from earlier renovation projects is being applied here. Also, a group of experts with low energy building experience supported the planning process.

RENOVATION MEASURES

• Insulation: ground floor, exterior walls and roof
• New facade exterior
• New windows
• Increased air-tightness of the building envelope
• New balconies relocated to outside the facade
• New build entrance vestibules
• New ventilation system with heat exchanger
• New energy-efficient household appliances
CONSTRUCTION

**Ground construction**  
U-value: 0.1 W/(m²·K)  
- Light expanded clay aggregate 500 mm  
- Concrete (existing) 180 mm  
- Total 680 mm

**Wall construction**  
U-value: 0.17 W/(m²·K)  
(Interior to exterior)  
- Concrete (existing) 75 mm  
- Insulation (existing) 120 mm  
- Concrete (existing) 80 mm  
- Eps-insulation 200 mm  
- Plaster 10 mm  
- Total 485 mm

**Roof construction**  
U-value: 0.1 W/(m²·K)  
(Top down)  
- Millboard  
- Insulation 50 mm  
- Match-board (existing) 23 mm  
- Air gap 20 mm  
- Loose wool insulation 500 mm  
- Concrete (existing) 180 mm  
- Total 773 mm

Cross section (source: Bostads AB Poseidon)
Summary of U-values W/(m²·K)

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
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<tbody>
<tr>
<td>Attic floor</td>
<td>0.14</td>
<td>0.1</td>
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<tr>
<td>Walls</td>
<td>0.31</td>
<td>0.12</td>
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<tr>
<td>Basement ceiling</td>
<td>0.4</td>
<td>0.1</td>
</tr>
<tr>
<td>Windows</td>
<td>2.4</td>
<td>0.9</td>
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</tbody>
</table>

**RENEWABLE ENERGY USE**

The district heating in Göteborg is mainly based on waste heat from industrial processes, garbage combustion and heat pumps. In this project there will be no solar thermal system installed, since it is impossible to justify this financially or ecologically for the above reasons.

**ENERGY PERFORMANCE**

Space heating, water heating (incl. distribution losses) and electricity use in the common area:

Before: 178 kWh/m²a  
After: 60 kWh/m²a  
Reduction: 66%

**BUILDING SERVICES**

There is one central ventilation unit with 85% heat recovery efficiency located in the attic. Additional heat is supplied to the apartments by heating radiators. Heat for space heating and domestic hot water is supplied by district heating. Other measures taken are hot water circulation to each apartment, installation of needle flushed toilets and energy efficient water taps. Also new energy efficient white goods are installed.

**INFORMATION SOURCES**

Catrin Gerle Bostads AB Poseidon  
www.poseidon.goteborg.se

**Brochure author**

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