



Low energy buildings - Case Study: Multi-family dwelling, Lübeck



Category / year

Renovation - Large residential (multi-family house)/ 2010



Address

Korvettenstr. 103-115, 23558 Lübeck (Germany)



Contact details

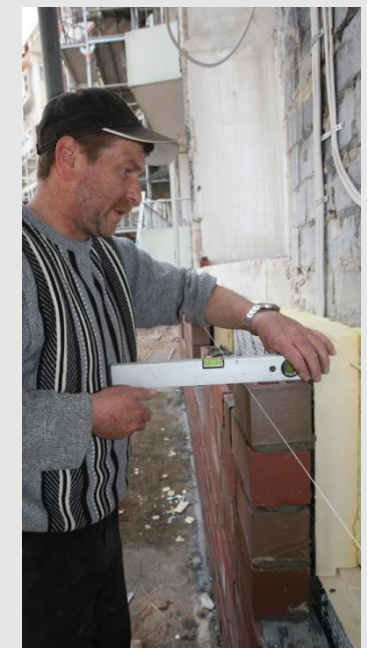
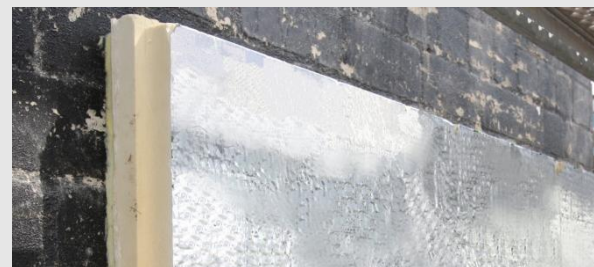
Owner/Builder:
Bauverein Lübeck

Consultant:
Fachhochschule Lübeck (University of Applied Science)

For further questions:
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Pictures





Description of the building

Detailed description:

This multi-family dwelling in Lübeck was renovated following the criteria of an energy efficiency retrofit (KfW Effizienzhaus 70 – EnEV 2007). The rehabilitation measures included the renovation of the façade (insulation of the outer façade), installation of new outside doors and windows and of a ventilation system (without heat recovery), the addition of one floor, the closing of the balconies and the addition of lifts.

The usable surface was 2.942 m² before renovation and became 4.424 m² after renovation.

Building envelope:

- *Walls:* 90 mm PUR/PIR and 20 mm glass fibre (cavity wall insulation). U-value of the walls before renovation: 1.35 W/(m²·K). U-value of the walls after renovation: 0.20 W/(m²·K). Reduction of about 84 % of the heat losses.

Renewables:

- Solar thermal system for hot water production



<Energy consumption

Energy values:

- *Heat losses before renovation:* 96.2 kWh/(m²·a)
Ventilation: 25.3 % Roof: 3.1 %
Windows doors: 20.4 % Walls: 32.4 %
Foundations: 5.3 % Thermal bridges: 6.7 %
- *Heat losses after renovation:* 15.6 kWh/(m²·a)
Ventilation: 47.7 % Roof: 3.1 %
Windows doors: 20.6 % Walls: 10.7 %
Foundations: 12.3 % Thermal bridges: 6.7 %

- *Final energy demand/consumption*
before: 148.7 kWh/(m²·a); after: 61.5 kWh/(m²·a)
- *Heating energy demand:*
before: 121.7 kWh/(m²·a); after: 35.7 kWh/(m²·a)
- *Average energy cost saving:* 5.72 €/ (m²·a)
- *Pay-back period:* 5.7 years

Use of renewables:

- District heating
- Solar thermal system: Energy production not known

