

APT in Kierling - AT

PROJECT SUMMARY

Renovation of an apartment building built in the 1970s, with an added storey and new elevator. Involvement of residents. Complies with Passivhaus Standards.

SPECIAL FEATURES

- Central ventilation system with heat recovery
- 120 m² solar panels for DHW
- Accessible for handicapped people

ARCHITECT

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OWNER

BUWOG, Bauen und Wohnen GmbH
Co-operative



IEA – SHC Task 37

Advanced Housing Renovation with Solar & Conservation

Before



BACKGROUND

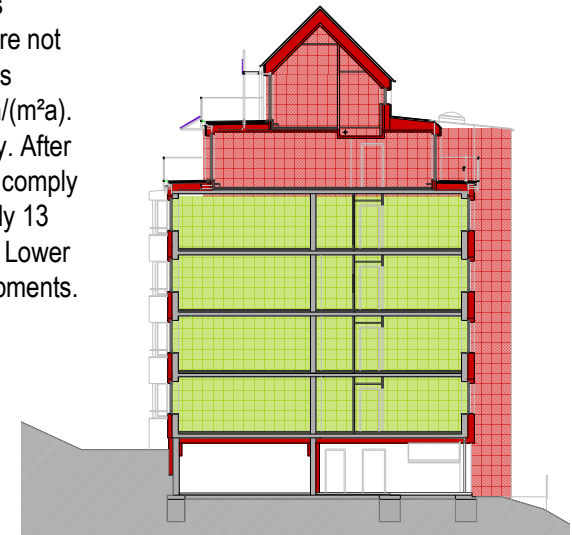
This four storey apartment building in Kierling, near Vienna, was constructed in the 1970s. The massive exterior concrete walls are not insulated and original windows are still in place. Space heating is supplied by an electrical floor heating, with a demand of 79 kWh/(m²a). The domestic hot water is also provided decentrally by electricity. After the renovation and enlargement from 24 to 30 apartments it will comply with Passive House standards, with a space heat demand of only 13 kWh/(m²a). The project will be sponsored by the federal state of Lower Austria, a program of the federal office for old building redevelopments.

OBJECTIVES OF THE RENOVATION

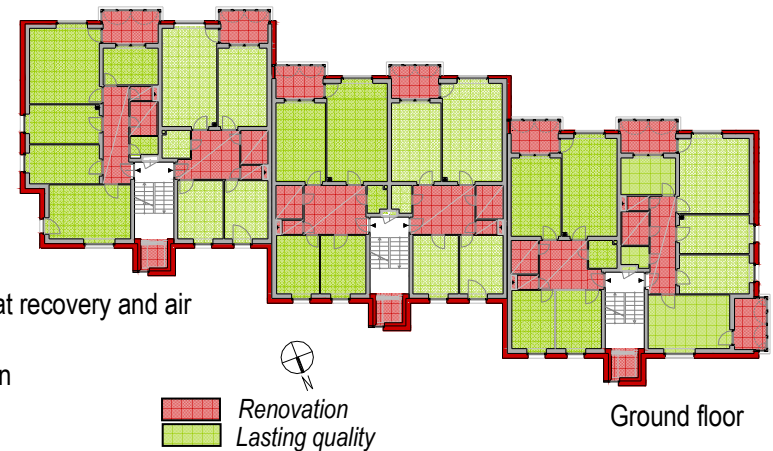
- Renovation with minimal disturbance of residents
- Involvement of the residents in the planning
- Reduction of heating costs
- Optimised building performance
- Access for handicapped people

SUMMARY OF THE RENOVATION

- 20-30 cm insulation of façade, roof and cellar ceiling
- windows to the Passive House Standards (triple glazing)
- Glazed balconies
- Handicapped access
- Six additional penthouse flats
- Installation of 3 elevators
- Central mechanical ventilation system with heat recovery and air heating
- Solar panels for domestic hot water preparation
- Biomass heating plant



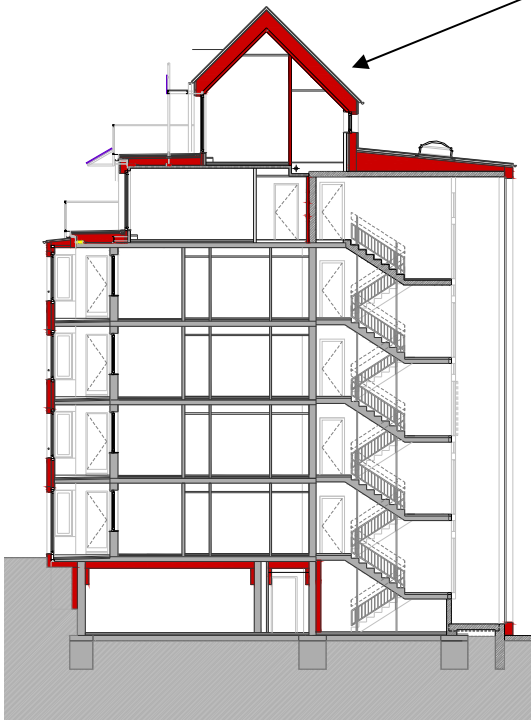
Section



Ground floor

After





Section

CONSTRUCTION

Roof construction *U-value: 0.083 W/(m²·K)*

(interior to exterior)	
plasterboard	15 mm
solid wood board	101 mm
glass-wool insulation	450 mm
softboard	20 mm
battens, ventilation space	50 mm
zinc metal sheet	5 mm
Total	641 mm

Wall construction *U-value: 0.138 W/(m²·K)*

(interior to exterior)	
interior plaster (existing)	15 mm
brick Durisol (existing)	300 mm
exterior plaster (existing)	25 mm
surfacers	2 mm
expanded polystyrene EPS	200 mm
exterior plaster	5 mm
Total	547 mm

Basement ceiling *U-value: 0.149 W/(m²·K)*

(top down)	
floor construction (existing)	131 mm
reinforced concrete floor (existing)	180 mm
glass-wool insulation	240 mm
Total	551 mm

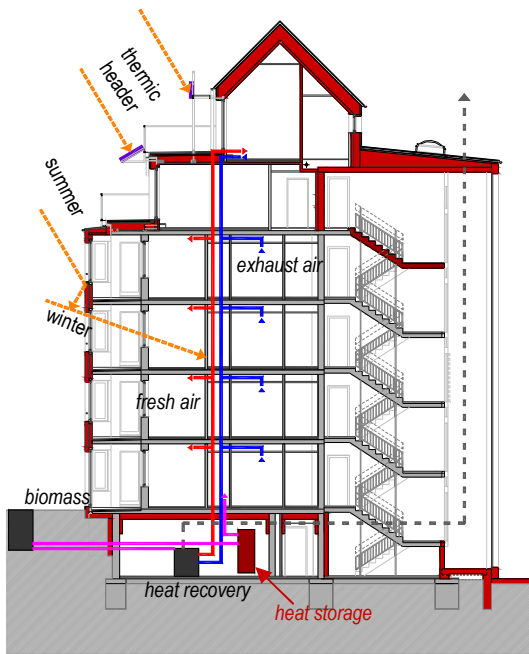
Window:
triple thermopane glazing
U_g: 0.65 W/(m²·K)
U_w: 0.85 W/(m²·K)



Window section

BUILDING SERVICES

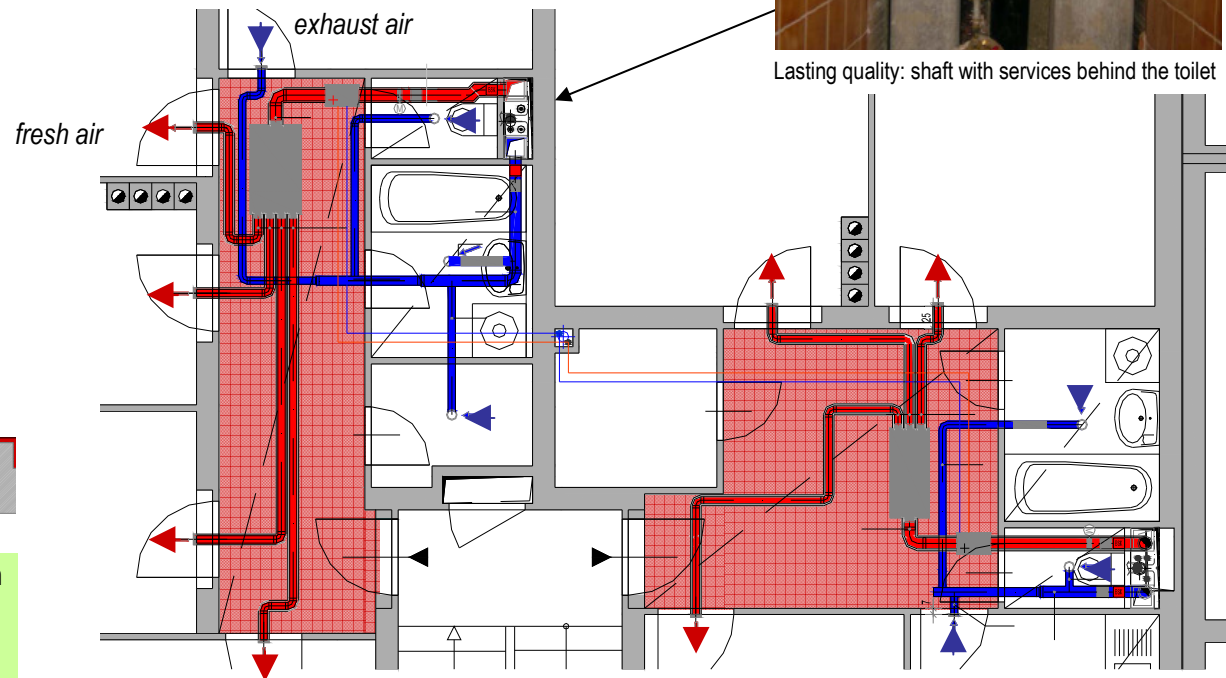
A new central ventilation system with heat recovery (efficiency 85%) and rotating heat exchanger will replace the existing heat system. Domestic hot water will be provided by solar panels and the remaining heat energy demand is covered by a central biomass plant, instead of decentral electrical boilers in each apartment. In the external zones of the apartments a water based system (radiators) provide back-up.



Simulation



Lasting quality: shaft with services behind the toilet



Penthouse



East façade

Summary of U-values $W/(m^2 \cdot K)$

	Before	After
Roof construction	0.5	0.08
Walls	0.7	0.14
Basement ceiling	1.0	0.15
Windows	ca. 2.8	0.85

RENEWABLE ENERGY USE

The 120 m² solar panels on the south-facing roof will achieve an annual solar fraction of 57% for domestic hot water preparation. Photovoltaic (PV) is planned as sunscreen on the upper ceiling.

BUILDING STATUS

Work in process

ENERGY PERFORMANCE

Space + water heating (primary energy)*

Before: 237.6 kWh/(m²a)

After: 36.1 kWh/(m²a)

Reduction: 85 %

* according to OIB Richtlinie 6

INFORMATION SOURCES

[Project: Inhabitants-friendly passiv house renovation in Klosterneuburg / Kierling, 2006, bmvit.](#)

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TEAM AUSTRIA



PROJECTS in AUSTRIA

PROJECT SUMMARY

- P1 Apartment building in Kierling**
- P2 5 story apartment house in Linz
- P3 Enhancement house Wimmer in St. Valentin
- P4 Single-family house in Pettenbach
- P5 Old people's home in Landeck
- P6 Housing in Purkersdorf
- P7 Historic building in Irnding
- P8 Enhancement in Mautern
- P9 Attic conversion in Innsbruck
- P10 House Schilchegger in St. Martin
- P11 Single-family house Kraiger in Kufstein
- P12 Apartmentbuildings in Dornbirn

