Apartment Building in Kierling / Austria

PROJECT SUMMARY

Housing renovation with
- vertical enhancement
- inhabitant involvement
- elevator installation

SPECIAL FEATURES

90 m² solar collectors on the roof
handicapped accessible

ARCHITECT

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OWNER

BUWOG, Bauen und Wohnen GmbH

SHC
SOLAR HEATING & COOLING PROGRAMME
INTERNATIONAL ENERGY AGENCY

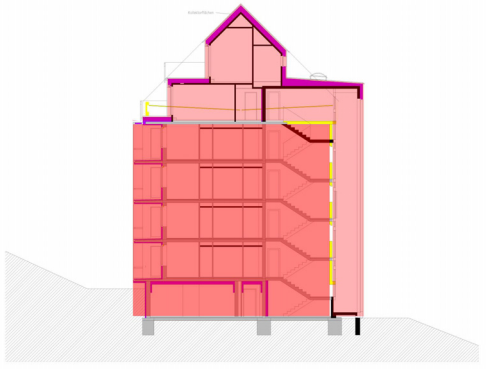
IEA – SHC Task 37
Advanced Housing Renovation with Solar & Conservation

Before

After

BACKGROUND

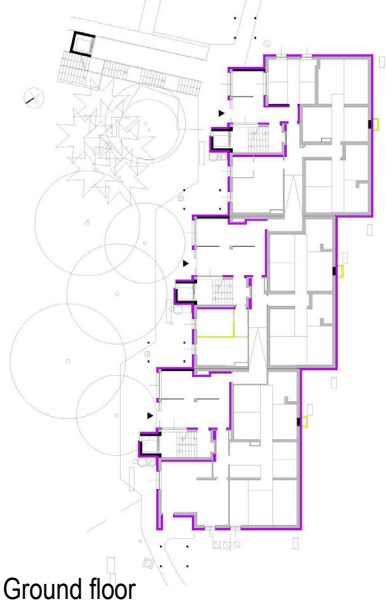
This four storey apartment building was constructed in the 1970s. The massive exterior walls are not insulated and contain the original windows. The space heating is supplied by an electrical driven floor heating system.
The domestic hot water is also prepared decentral by electricity.



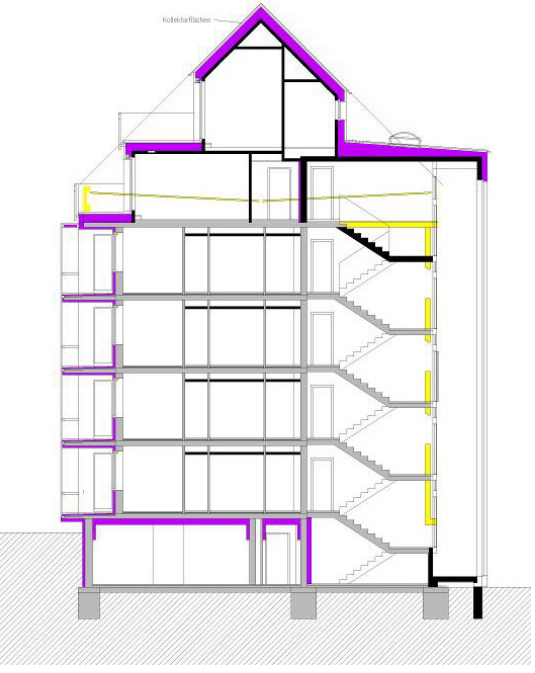
Section

SUMMARY OF THE RENOVATION

- insulation of facades, roof and cellar (passive house energy standard is targeted)
- passive house suitable windows
- glazed balconies
- installation of 3 elevators
- mechanical ventilation with heat recovery and air heating
- solar collectors for domestic hot water preparation
- six additional flats at the uppest ceiling
- biomass heating station



Ground floor



concept thermal insulation

CONSTRUCTION

Roof construction

(interior to exterior)

Fibrated concrete roof panels	30 mm
Battens	60 mm
Softboard	20 mm
Mineral wool insulation	450 m
Solid wood board	100 mm
Plasterboard	15 mm
Total	99 mm

Wall construction

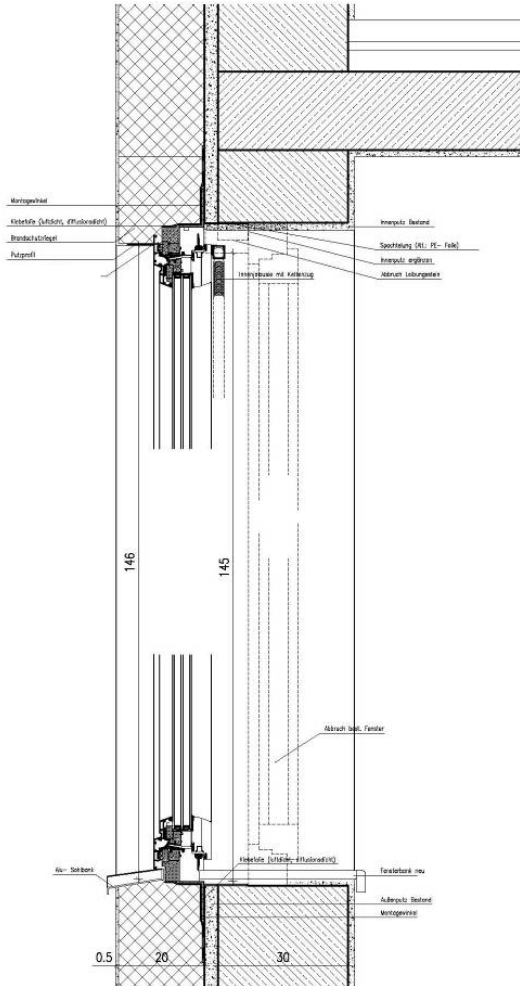
(interior to exterior)

Interior plaster (existing)	15 mm
Brick Durisol (existing)	300 mm
Exterior plaster (existing)	25 mm
Expanded plystyrene EPS	200 mm
Exterior plaster	5 mm
Total	545 mm

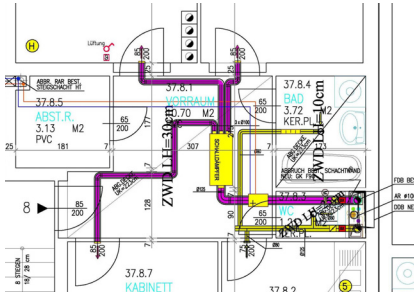
Basement ceiling

(top down)

Floor construction (existing)	125 mm
Reinforced concrete floor (existing)	180 mm
Mineral wool insulation	240 mm
Total	545 mm



window section



Summary of U-values W/(m²·K)

	Before	After
Roof construction	ca.0,5	0,11
Walls	ca.0,7	0,15
Basement ceiling	ca.1,2	0,12
Windows*	ca.3,2	0,85

BUILDING SERVICES

A new centralised ventilation system with heat recovery (efficiency 85 %) and a heat exchanger will replace the existing floor heating.

Domestic hot water will be heated by solar collectors and biomass instead of decentral electric boilers in each apartment.

RENEWABLE ENERGY USE

The 90 m² solar collectors on the south- facing roof achieve an annual solar efficiency factor of the solar heating system of 57% (for warm water).

ENERGY PERFORMANCE

Space + water heating (primary energy)
Before: 181.250 kWh/a
After: 68.761 kWh/a
Reduction: 62 %

INFORMATION SOURCES

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