FREISTADT (Austria)

50 % energy saving
(estimated, exact number will be added later)
Exchange of old oil-boiler
Special noise-protecting glazing of windows

Project data

Location, address:	Leonfeldner Straße 7+9, 4240 Freistadt
Region:	Upper Austria
Surroundings:	North of the country; hilly landscape, heavy traffic at this location
Climate:	Continental
Heating degree days:	4297
Year of construction and renovation:	1982 (constructed); 2004 (renovated)
Typology:	Apartment building
No of dwellings:	36
Total floor area:	2.477,40 m²
Owner:	Wohnungsgenossenschaft Lebensräume (social housing association)
Architect and Builder:	Wohnungsgenossenschaft Lebensräume
Costs of energy saving measures:	€ 637,370 (incl. VAT)
Renovation financed by:	Loan and reserves by Lebensräume, subsidies from Federal Government

Figure 1: Building after renovation

Objectives and Results

The social housing association "Lebensräume" has a renovation strategy – if a building is between 20 and 25 years old, it is inspected to check the standard of the house. The association always aims at a comprehensive renovation, as this is seen the most efficient way. In this case, the tenants' main wishes were the thermal and visual improvement and the optimisation of the heating system.

The renovation was finished successfully. The increase of the rent (due to the renovation costs) is balanced by the lowering of the operational costs of the building, especially the heating costs.

Renovation concept

Key renovation features

- Insulation of façade
- Insulation of top ceiling
- Insulation of ground floor
- Installation of new windows with noise protection
- Exchange of the old oil boiler to a new gas heating system
- New thermal velves
- Optimisation of the whole heating system

State-of-the-art

Before renovation	After renovation

Constructions [U-values: W/m²K]
- Non-insulated top ceiling [0.] will be added later
- Non-insulated ground floor [0.] will be added later
- Non-insulated façades [0.] will be added later
- Windows [] will be added later
- Entrance door [~5.00.]

Installations
- Old oil boiler

Constructions [U-values: W/m²K]
- Insulation of top ceiling [0,16]
- Insulation of ground floor [0.39]
- Insulation of façades [0,25]
- Windows [1.1]
- Entrance door [~2.00.]

Installations
- New gas boiler
- New thermostatic valves
- Optimisation of the heating system

Energy saving and monitoring

Energy consumption before renovation:
kWh/m²: will be added later
Energy Performance Indicator: will be added later

Energy consumption after renovation:
kWh/m²: will be added later
Energy Performance Indicator: 45 kWh/m²,a
Percentage saving   ~ 50 % (estimated)

Figure 2: Building after renovation

Additional information
- As the building is situated at a street with heavy traffic, the noise exposure is very high. In the frame of the renovation, new windows with a special noise-protecting glazing were installed in all rooms. For this measure, the regional government granted additionally a "noise reduction" subsidy.
- Many tenants complained about the very bad lighting of the underground car park. The security in this section of the building was improved by additional lights and by a new white painting of the walls. These measures ensure good illumination of the car park.

Lessons learned and conclusions
- In the planning phase, tenants usually express reservations about the renovation project. After finishing the renovation, all tenants were very happy with the new appearance of the building.
- Some tenants reported that it is much warmer in winter and that they have to switch on their radiators less often than before – a proof that the insulation works.
- It is very important to inform the tenants well and to listen to their wishes and proposals and – where possible – to fulfil some of them.

References
[1] Gemeinnützige Wohnungsgenossenschaft Lebensräume, Handel-Mazzetti-Straße 1, 4021 Linz, Tel.: +43 732 69400, office@lebensraeume.at, www.lebensraeume.at