



after refurbishment



before refurbishment

GENERAL INFORMATION	
Building owner	Ennstal-Neue-Heimat Wohnbauhilfe, Gemeinnützige Wohnungsgesellschaft m.b.H. (a non-profit housing association)
Address	Bozenerstraße 17–19, Hammer-Purgstallgasse 21–23, 8020 Graz
Number of dwellings	447 before refurbishment 447 after refurbishment
Number of floors	up to 4
Average size of the dwellings	56 m ² before refurbishment 56 m ² after refurbishment
Total heated floor area	25,000 m ² before refurbishment 25,000 m ² after refurbishment
Year of construction	1940
Year of refurbishment	2001
Has the refurbishment been carried out while the dwelling was occupied?	Yes
Has an independent quality assurance been carried out?	Quality assurance is a core element of Thermoprofit Plus
Total building costs	4,000,000 €
Building costs concerning energy recovery	Unkown



INITIAL SITUATION/LOCAL CONDITION

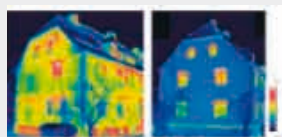


figure: thermografies of the residential estate Denggenhof before renovation (left) and after the insulation (right).

The residential estate consists of 12 independent economic units with altogether 72 buildings and 447 accommodation units. The heating system were splitted in 50 % individual heating and 50 % district heating. The center of attention of this project was to improve the tenant's quality of life and to involve the tenant's interests in the decision making.

TYPE OF REFURBISHMENT (MEASURES WHICH HAVE BEEN CARRIED OUT)

- Thermal insulation of the exterior property walls (10 cm)
- Thermal insulation of the ceilings
- Base renovation with thermal insulation
- Exchange of the old windows with new windows made of wood-profiles
- Environment-friendly coating
- Renewal of the outdoor installations (pergola, covered wooden bicycle stand)
- Development of green areas

The production of this good practice example is supported by

Intelligent Energy  Europe

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WHY HAVE THE MENTIONED MEASURES BEEN CARRIED OUT?

There were no additional costs for the tenants (financing of the investments through the Maintenance and Improvement Contribution with energy savings of 100,000 € per year). The particularity of this project is the dimension of ecological renovation: 1,500 windows were replaced with new windows made of wood-profiles. The use of PU-foam was avoided and mineral wool and sealing tape were used instead. Durable products (for example titanium zinc sheet metal) and environmentally friendly coats of paint were consciously chosen.

PLANS



ENERGY RELATED ACTIVITIES

Exterior components

- Insulation of outer walls (with 10 cm mineral wool)
- Insulation of cellar floor
- Insulation of attic floor
- Replacement of windows

Systems engineering

District Heating system

ENERGY RELATED INDICATORS

	Initial situation	After refurbishment	Reduction
Energy performance	130 kWh/m ² a	63 kWh/m ² a	51 %
Energy consumption	3,5 Million kWh/a	1,7 Million kWh/a	51 %
CO ₂ -emission	564 t/a	282 t/a	50 %
Heating system	50 % District heating system 50 % individual heating systems	District heating system	
DHW-system	Individual systems	District heating system	
Monitoring system	No monitoring	Energy management and controlling system	
Regional energy costs	50–150 €/MWh depending on the heating system and the fuel		

SUBSIDIES

Special time loan of the Province of Styria. Term of loan 22 years, 0.5 % interest.

STATEMENT

Julius Rozner (leader of the property management)
The general refurbishment, especially the thermal insulation of the outer walls, resulted in energy savings of 50%.
We are very proud of the tenant involvement process, which has been taken a very important part for a successful and satisfying refurbishment - without additional costs for the tenants.

CONTACT

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