



General information

Building owner	City of Graz, Department for Residential Buildings
Address	Vinzenz-Muchitsch-Straße 29/31, 8020 Graz
Total heated floor area	2.000 m ²
Year of construction	1960
Year of refurbishment	2001

Initial situation



The residential estate consists of 30 accommodation units. The average useable space amounts to approximately 68 m² per flat. Before the refurbishment some windows were replaced and some activities for maintenance were realised. The particularity of this refurbishment was realised as a Thermoprofit PLUS - project. The Graz Energy Agency was responsible for the process of the complete renovation of this residential estate.

Innovative financing model



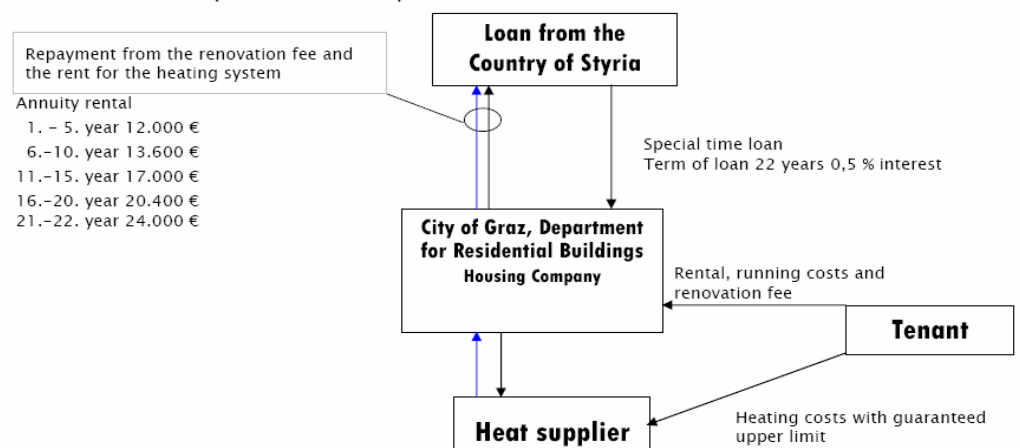
The implementation of the measures for energetic improvement of the "Vinzenz-Muchitsch-Straße 29/31" in these properties was realised under an ecological refurbishment model called **Thermoprofit PLUS**. Thermoprofit PLUS includes special ecological measures in addition to a standard Thermoprofit - project.

The heating- and solar system is financed by the costs for heat, a so called "sale & lease back" - modell.

The contractor

- installed the heating system for the building owner (he got the full payment)
- leased the system during the term of the contract of the heat supply
- charged the leasing rate against the tenants (by the heat flat rate)

Finance-Flow Chart (sale & lease back)



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Energy related activities

Building shape	Insulation of outer walls (with 10 cm mineral wool) Insulation of cellar floor (with 8 cm mineral wool slabs) Insulation of attic floor (with 18 cm mineral wool) Insulation of thermal weak points (e.g. at the balcony-plates) Replacement of windows (wood - profiles)
Other activities	Replacement of blindness with titanium zinc plate Replacement of electrical installation (free of PVC)
Solar system	No solar system

Energy related indicators

	Initial situation	After refurbishment	Reduction
Energy performance	138 kWh/m ² a	51 kWh/m ² a	63%
Energy consumption	340.000 kWh/a	131.000 kWh/a	62%
CO2 - emission	85 t/a	34 t/a	60%
Heating system	Individual heating systems (gas,oil,break,wood,electricity)	District heating system	
DHW - system	Individual systems	District heating system	
Monitoring system	No monitoring system	Energy management and controlling system	

Financial indicators

Energy costs	19.520 €/a	7.856 €/a	60%
Investment costs of the total refurbishment	440.000 €		
Investment costs of the energy related refurbishment	124.280 €		
Costs per saved kWh	2,11 €		

Report of the investment costs

Loan 342.001 €
(Loan from the Country of Styria)

The investments are financed through the Maintenance and Improvement Contribution.

Statement



Gerd Schalk (Leader of the management of accommodation units)

The city of Graz is very proud of the ecological refurbishment, the savings of energy costs for every tenant and the reduction of the CO2 - emission about 60 %. This is a very important step towards a sustainable development of the city of Graz. We are striven to refurbish further old buildings in an energetic and ecological way.

The production of this good practice example is supported by

Intelligent Energy  Europe

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