ROSH
Retrofitting of Social Housing

GOOD PRACTICE: TECHNICAL EXAMPLE POLAND

Dąbka

after refurbishment

before refurbishment

GENERAL INFORMATION	A typical building from seventies, which is built´only with prefabricated concrete units
Building owner	ownership community
Address	Gdynia, Płk. Dąbka Str. 57
Number of dwellings	60 before refurbishment 60 after refurbishment
Number of floors	5
Average size of the dwellings	52.9 m² before refurbishment 52.9 m² after refurbishment
Total heated dwelling floor area	3,172 m² before refurbishment 3,172 m² after refurbishment
Year of construction	1978
Year of refurbishment	2006
Has the refurbishment been carried out while the dwelling was occupied?	Yes
Has an independent quality assurance been carried out?	No
Current total building costs	66,000 €/a (water, waste water, waste, electricity, natural gas, heat, administration, refurbishment fund)
Current building costs concerning energy recovery	19,600 €/a

INITIAL SITUATION/LOCAL CONDITION	• the outer gable walls are 25 cm thick, made of prefabricated ferroconcrete units with inner insulation, these walls have the additional insulation with 6 cm of foamed polystyrene (U = 0.46 W/(m²K)) • the outer longitudinal walls are 25 cm thick and made of prefabricated ferroconcrete units with inner thermal insulation (U = 0.95 W/(m²K)) • the floors are girderless, made of prefabricated reinforced slabs, the basement floor is insulated with 2 cm of foamed polystyrene (U = 1.01 W/(m2K)) • the flat roof is insulated with 3 cm of mineral wool (U = 0.92 W/(m²K)) • windows have double wood frames (U = 2.6 W/(m²K)), some of them have been replaced by tenants with windows with single vinyl frame and 2-pane glazing (average U assumed as 1.7 W/(m²K))
TYPE OF REFURBISHMENT (MEASURES WHICH HAVE BEEN CARRIED OUT)	• additional insulation of building envelope • improvement of DHW system • improvement of heating system

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?	The measures mentioned above have been selected on the basis of the energy audit which was performed according to the Thermomodernisation Law. The most important selection criterion was obtaining more than 25 % energy saving for heating and hot water production according to this Law.
PLANS	Not available at present.

ENERGY RELATED ACTIVITIES			
Exterior components	• insulation of outer longitudinal walls with 12 cm of foamed polystyrene • insulation of outer gable walls with 8 cm of foamed polystyrene • insulation of flat roof with 18 cm of granulated mineral wool		
Systems engineering	• repairing of thermal insulation of DHW pipes • hydraulic balancing of heating installation		
ENERGY RELATED INDICATORS	**Initial situation**	**After refurbishment**	**Reduction**
Energy performance	209.38 kWh/m²a	154.48 kWh/m²a	26.2 %
Energy consumption	664,167 kWh/a	490,000 kWh/a	26.2 %
CO_2-emission	51.26 kg/m²a	37.82 kg/m²a	13.4 kg/m²a
Heating system	Central heating supplied by group DH substation	Central heating supplied by group DH substation	
DHW-system	Centralised DHW preparation in DH group substation	Centralised DHW preparation in DH group substation	
Monitoring system	The heat meter in the building measures heat consumption for heating, the heat meter in group DH substation measures heat consumption for DHW preparation and water meters in the building measure DHW consumption. Readings are taken every month.	The heat meter in the building measures heat consumption for heating, the heat meter in group DH substation measures heat consumption for DHW preparation and water meters in the building measure DHW consumption. Readings are taken every month.	
Current regional energy costs	9.74 €/GJ (0.0351 €/kWh) + 14,943.65 €/MW/a (district heating)		

SUBSIDIES	Financing: 21 % of own funds, 79 % of loan. 25 % of subsidy to the capital of the loan taken by the investor. Subsidy instituition: Thermomodernisation Fund.
STATEMENT	
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