



after refurbishment

<b>GENERAL INFORMATION</b>	The building used to be part of military property and today belongs to an ownership community (dwellings have been sold)
Building owner	ownership community
Address	Wejherowo, Piotr Skarga Str. 4
Number of dwellings	20 before refurbishment 20 after refurbishment
Number of floors	5
Average size of the dwellings	63.3 m <sup>2</sup> before refurbishment 63.3 m <sup>2</sup> after refurbishment
Total heated dwelling floor area	1,265.6 m <sup>2</sup> before refurbishment 1,265.6 m <sup>2</sup> after refurbishment
Year of construction	1987
Year of refurbishment	2004
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	30,000 €/a (water, waste water, waste, electricity, natural gas, heat, administration, refurbishment fund)
Current building costs concerning energy recovery	10,500 €/a



<b>INITIAL SITUATION/LOCAL CONDITION</b>	<ul style="list-style-type: none"> <li>• Outer walls are 21 cm thick and made of prefabricated ferroconcrete units with inner insulation of mineral wool (U-value = 0.67 W/(m<sup>2</sup>K))</li> <li>• the floors are made of 16 cm of prefabricated, reinforced concrete slabs. The basement floor is insulated with 2 cm of foamed polystyrene (U-value = 1.06 W/(m<sup>2</sup>K))</li> <li>• the flat roof is insulated with 12 cm of mineral wool (U-value = 0.46 W/(m<sup>2</sup>K))</li> <li>• windows have double wooden frames, some of them have been replaced by tenants with windows which have a single vinyl frame and double-pane glazing (U-value = 2.6 W/(m<sup>2</sup>K))</li> </ul>
<b>TYPE OF REFURBISHMENT (MEASURES WHICH HAVE BEEN CARRIED OUT)</b>	<ul style="list-style-type: none"> <li>• additional insulation of building envelope</li> <li>• replacement of staircase windows</li> <li>• improvement of heating system</li> </ul>
<b>WHY HAVE THE MENTIONED MEASURES BEEN CARRIED OUT?</b>	The measures mentioned above have been selected on the basis of the energy audit which was performed according to the Thermo-modernisation Law. In compliance with this Law, the most important criterion was to obtain energy savings of more than 25 % in heating and hot water consumption.

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<b>PLANS</b>	Not available at present.
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<b>ENERGY RELATED ACTIVITIES</b>			
Exterior components	<ul style="list-style-type: none"> <li>• insulation of outer walls with 10 cm of foamed polystyrene</li> <li>• insulation of flat roof with 15 cm of granulated mineral wool</li> <li>• replacement of staircase windows and doors</li> </ul>		
Systems engineering	<ul style="list-style-type: none"> <li>• installation of thermostatic valves on radiators</li> <li>• installation of control valves on risers in heating system</li> <li>• repairing of thermal insulation of heating pipes</li> <li>• rinsing of heating installation</li> <li>• hydraulic balancing of heating installation</li> </ul>		
<b>ENERGY RELATED INDICATORS</b>			
	Initial situation	After refurbishment	Reduction
Energy performance	269.09 kWh/m <sup>2</sup> a	201.70 kWh/m <sup>2</sup> a	25.0 %
Energy consumption	340,556 kWh/a	255,278 kWh/a	25.0 %
CO <sub>2</sub> -emission	126.90 kg/m <sup>2</sup> a	95.09 kg/m <sup>2</sup> a	31.8 kg/m <sup>2</sup> a
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	9.30 €/GJ (0.0335 €/kWh) + 22,662.04 €/MW/a (district heating)		

<b>SUBSIDIES</b>	Financing: 20 % own funds, 80 % loan. 25 % subsidy from the capital for the loan taken by the investor. Subsidy institution: Thermomodernisation Fund.
<b>STATEMENT</b>	
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