



before refurbishment



GENERAL INFORMATION	Dormitory, building 1 of „School dormitories“
Building owner	Municipality
Address	Town of Kardjali
Number of dwellings	42 before refurbishment 42 after refurbishment
Number of floors	3
Average size of the dwellings	
Total heated floor area	999.01 before refurbishment 999.01 after refurbishment
Year of construction	1960
Year of refurbishment	2007
Has the refurbishment been carried out while the dwelling was occupied?	Yes
Has an independent quality assurance been carried out?	An energy audit has been carried out. The quality of reconstruction has been approved by licensed experts.
Total building costs	30,555 €
Building costs concerning energy recovery	30,555 €
INITIAL SITUATION/LOCAL CONDITION	<ul style="list-style-type: none"> • Poor condition of insulation of external walls • Poor condition of insulation of roof • High infiltration and bad condition of windows
TYPE OF REFURBISHMENT (MEASURES WHICH HAVE BEEN CARRIED OUT)	<ul style="list-style-type: none"> • Replacement of windows • Thermal insulation of walls • Thermal insulation of roof
WHY HAVE THE MENTIONED MEASURES BEEN CARRIED OUT?	Refurbishment measures have been carried out in order to reduce heat losses and to improve the living conditions.

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PLANS	Not available at present.
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ENERGY RELATED ACTIVITIES			
Exterior components			
Systems engineering			
ENERGY RELATED INDICATORS	Initial situation	After refurbishment	Reduction
Energy performance	224 kWh/m ² a	78.3 kWh/m ² a	65 %
Energy consumption	223,732 kWh/a	78,207 kWh/a	65 %
CO ₂ -emission			
Heating system	Centralized water heating system	Centralized water heating system	
DHW-system	Electric water heaters	Electric water heaters	
Monitoring system			
Regional energy costs	1 MWh = 67 €		

PROMOTION	
SUBSIDIES	100 % financed by the Municipality
STATEMENT	The general condition of the building was estimated to be poor and inadequate for living of the tenants due to high air infiltration through the windows as well as poor roof and external wall insulation. After an energy audit of experts, the result was that total energy savings of 65 % could be achieved after applying three different energy saving measures (new windows, better external wall and roof insulation).
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