



El-Education  
Best practice example No 5 from Latvia



**Latvia**  
**Olaine**

<b>35% energy saving</b>
<b>Lower expenses for heating</b>
<b>Improved and more comfortable dwellings</b>

### **Project data**

Location, address:	32 Zemgales street, Olaine
Region:	Central Latvia
Surroundings:	City
Climate:	Continental and cold
Heating degree days:	4060
Year of construction and renovation:	1973 (constructed); 2005 (renovated)
Typology:	Multi-dwelling building
No of dwellings:	54
Total floor area:	2000 m <sup>2</sup>
Owner:	Cooperative building
Costs of energy saving measures:	51373LVL (approx. 74 000 Euros)
Renovation financed by:	Loan from commercial bank



Fig.1 Front side of the building

### **Objectives and results**

The project is initiated by the cooperative. The objectives are to increase the comfort in the dwellings, to reduce the costs for heating and maintenance and to improve the quality of the building

The total investment was 51 373 LVL (approx. 74 000 EUR), that represents 37.1 Euros/m<sup>2</sup>. The simple pay-back period is 23,8 years. An energy audit was performed before the renovation.

### **Renovation concept**

#### **Key renovation features**

- Insulation of external walls
- Insulation of roof
- Improvement of the heating system
- Insulation of ceiling in basement

## State-of-the-art

### Before renovation

#### Constructions [U-values: $W/m^2K$ ]

- Non-insulated roof
- Ground floor – reinforced concrete panels 3,808
- Façade walls - aeroconcrete 0,766
- Double-glazed windows with wooden frames, partly sealed

#### Installations

- Heating supplied by district heating network
- Low efficiency of the heating system

### After renovation

#### Constructions

- Insulation of roof
- Insulation of basement ceiling
- Insulation of external walls

#### Installations

- Improvement of heating system – balance, installation of heat meter, insulation of pipes

## Energy saving and monitoring

### Energy consumption before renovation:

Average energy consumption for consumption for heating demand recalculated to standard year 268.82MWh/year  
Specific heat consumption, 147 kWh/m<sup>2</sup>year

Average room temperature 17 °C

### Energy consumption after renovation:

Average energy consumption for consumption for heating demand recalculated to standard year 174.72/year  
Specific heat consumption, 95 kWh/m<sup>2</sup>year  
Average room temperature 21 °C  
Percentage saving: 35%

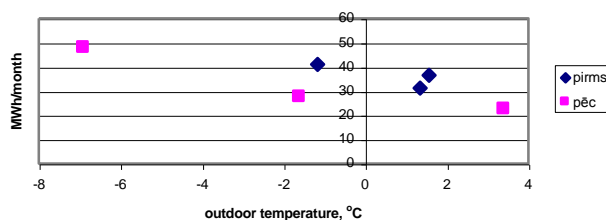


Fig. 2 Heat consumption depending on outdoor temperature

## Additional information

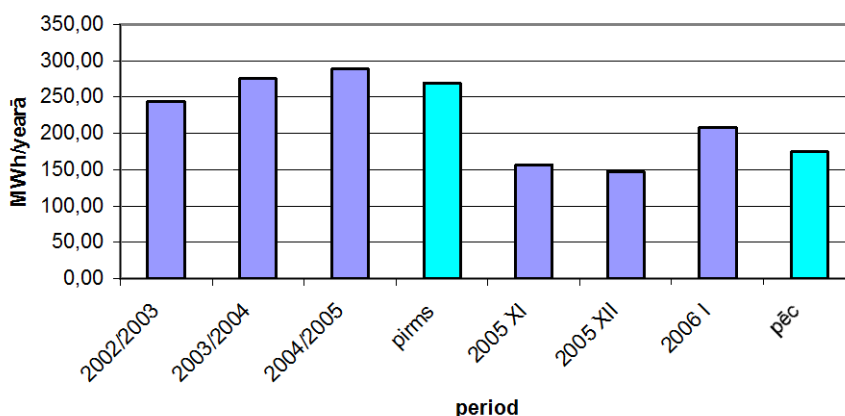


Fig. 3 Heating energy consumption recalculated for standard year

## Lessons learned and conclusions

- The data collected from the energy audit performed before the renovation gives opportunities to choose the most suitable energy efficiency measures for the building
- The availability of grants, soft loans and flexible credits is necessary for the realization of projects for renovation of multi-dwelling buildings.