# ENERinTOWN Case Study

## Eco-School-Programme / City of Regensbug, Germany

**Client**

City of Regensburg

**Initial situation**

number of municipal buildings: 300

costs for energy and water consumtion:

| | | |
|---|---|---|
| electrical energy | 8.300.000 kWh/a; | 1.230.000,- € |
| heating energy | 35.650.000 kWh/a; | 2.060.000,- € |
| water | 127.300 m3/a; | 350.000,- € |
| | | 3.640.000,- € |

30 state and urban schools in Regensburg consume approximately 3 million litres of oil annually.

**Object data**

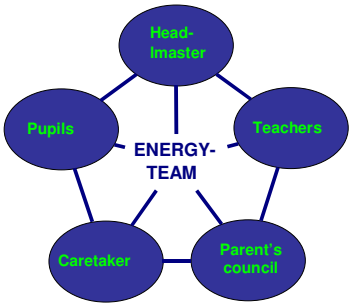
Participation of 30 schools in the programme during an initial contract period of 5 years, starting 1999.

number of school buildings: 30

costs for energy and water consumtion:

| | | |
|---|---|---|
| electrical energy | 3.200.000 kWh/a; | 500.000, - € |
| heating energy | 20.000.000 kWh/a; | 1.100.000,- € |
| water | 50.000 m3/a; | 170.000,- € |
| | | 1.770.000, - € |

**Realisation model**




The aspired savings were achieved either by low cost and no cost measures above all a change of behaviour or by an optimization of the internal building organization.

During the project almost half of the economized money was reinvested by the administration into energy-saving measures. About 25% of it was paid back to the schools at their free disposal. The remaining part was transfered to the engineering office ZREU for advising this project. The ecoschool program caused no costs for the city of Regensburg.

## Measures implemented

Examples

- thermo-stops in storage water heaters
- energy saving lamps for plants
- use of dustbins with reduced capacity
- re-fitting of water-saving push-buttons in toilets
- removal of surplus urinals
- load throw-off circuit
- re-fitting of clock timers
- installation of motion detectors
- clock timers for corridor lighting
- light control in gyms
- network connection of PV-plant
- exchange of fluorescent tubes 2:1
- controlled hot water pumps
- replacement of a 150 kW standard boiler by a 70 kW low-temperature boiler
- replacement of two atmospheric burners by one 260 kW condensing boiler
- repair of combined heat and power unit
- substitution of 55 standard fridges by energy-efficient fridges
- control of ventilation system CFA in a secondary school
- re-fitting of toilet tanks
- network connection of combined heat and power unit
- ventilation plants with heat recovery, use of modern energy-efficient ventilators, optimisation of control systems

## Results

Economizing results within the framework of the ecoschool program (1999 - 2006)

| | |
|---|---|
| heating energy: | 6.446.000 kWh |
| electrical energy: | 280.000 kWh |
| drinking water: | 46.700 m³ |
| garbage: | 1.680 m³ |
| emission : | 1.700 t CO2 |
| money: | 661.000 Euros |
| Re-investment: | 313.000 Euros |

## Benefits for the clients

With the ecoschool program, three aims were reached:
- the ecological object to save energy and resources and therefore to decrease the environmental pollution and the greenhouse effect;
- the pedagogical aim to give pupils practical experience, how energy can be economized successfully by conscious acting;
- the economical aim to save money for resources, which can partly be reinvested in additional energy saving measures.

## Assistance provided

ZREU Zentrum für rationelle Energieanwendung und Umwelt GmbH

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