

ENERinTOWN Case Study

Reduction of running costs in social housing through energy and water saving, L'Isle d'Abeau, France

Client City of L'Isle d'Abeau

Initial situation



The extensive retrofit programme of 6 buildings built in 1984 with 110 social dwellings in Grenoble, France aims to demonstrate the possibilities of renewable energies and water saving measures.

The buildings were erected in the seventies and eighties, and can thus represent a good example to many other European cities with similar buildings together with social and ecological problems. The project is located in L'Isle d'Abeau, a town 30 km from Lyon in the Rhone Alpe region.

The dwellings have high running costs, so the retrofit programme will besides the elevated level of comfort generate decreased expenses on water and energy, which is an important beneficial side effect in social housing. In these buildings there were a lot of turnover and a high vacancy rate because of the high maintenance costs for heat (electric heating) and domestic hot water. By the retrofit programme, the intention was to reduce maintenance costs with an improvement of quality of life and treatment of all environmental aspects.

The combination of both environmental and social benefits from the project is of particular interest, as many housing projects tend to focus merely on improvement of comfort and less on societal impact.

It is aimed to demonstrate the possibilities to reduce maintenance costs in social housing with renewable energies, energy saving and water saving and to improve the situation of inhabitants. Most of them have economic difficulties. The aim is to reach affordable costs.

The retrofit programme stands out as a total environmental approach, which aims to lower the energy consumption by some 40% through enhanced heating systems and education of end users.

Object data 6 social housing buildings built in 1984

Realisation model

Communication with end users about possibilities of energy saving is highlighted as crucial to the success of the project, since user behaviour has high impact on energy consumption.

The total maintenance costs were aimed to be decreased by 35%. This is a very important demonstration because a lot of old buildings in Europe, notably social housing buildings have high maintenance costs linked with social problems.

It is the intention that the project will serve as an educational process for builders and consultants, which can facilitate the dissemination of knowledge on environmental technologies.

OPAC 38 has a social mission: to provide accommodation for people with low incomes. That is why, one of its goals, is to reduce the couple "rent + maintenance charges". This project also aims to demonstrate the benefits of renewable energies and energy management regarding the maintenance costs reduction.

Measures implemented

Firstly electricity for heating is replaced by natural gas with two optimised combustion central boilers that are regulated according to heat demand. The boilers are supplemented by 165 m² of solar water collection panels mounted on the roof and high performance heat exchangers, and the entire system, including pipe structure and pumps, is optimised by a total energy approach. 48 m² of photovoltaic modules for ventilation and low energy lighting in common areas are integrated in the roof of the buildings.

Results

For heating a preliminary monitoring period from October to December 2003 shows:

- 13.5% less gas consumption compared to OPAC 38's other buildings.
- 25% lower consumption for domestic hot water compared to OPAC 38's other buildings.

Although there were some problems when the installation was started up, it is now running efficiently. The acceptance by the tenants is obtained. They feel an improvement of their comfort, especially for heating, and they are very satisfied with the reduction in maintenance costs. The overheating due to the former glass roof is often mentioned. The inside hall is now a comfortable place for the tenants to meet.

The heating and the DHW are produced with gas bought at 25.96 €/MWh. The maintenance for the heating costs 6,536 Euro/year and for the DHW 4,228 Euro/year. Finally the renting of the individual DHW meters costs 21 Euro/dwelling.

Thanks to the solar production, the DHW production only costs 2.97 Euro/m³ while it is 5.23 Euro/m³ in average in OPAC 38's other dwellings; which corresponds to a 57% reduction.

Regarding total operational costs the achieved savings is approx. 61% - see table below:

Costs in €	Before work	After work
Energy costs	109,482	31,382
Maintenance	3,410	13,074
Total costs	112,892	44,456

Benefits for the clients

- Saving on natural resources
- Emissions reduction and climate protection
- Additional financial resources
- Improvement of comfort

Builder

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Assistance provided

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