



## SEVRAN (France)

### A sustainable refurbishment project 42% energy saving

#### Project data

Location, address:	Cité basse Quartier Pont Blanc
Region:	Ile de France, department Seine-Saint-Denis
Surroundings:	New 60's suburbs
Climate:	Mild and humid
Heating degree days:	2359
Year of construction and renovation:	1970-1973 (constructed); 1983, 2001-2005(renovated)
Typology:	Apartment building
No of dwellings:	417 dwellings, 6 five-storey buildings
Total floor area:	28 700 m <sup>2</sup>
Owner:	SA HLM "LOGIREP" (social housing company)
Architect and Builder:	M. FREIBERG
Costs of energy saving measures:	The cost of the entire programme is 10.08 million € of which 6.9 million € for energy saving measures.
Renovation financed by:	The cost of the refurbishment as been financed as follows: <ul style="list-style-type: none"> <li>- European Union: 218,000 €</li> <li>- Region: 1,427,000 €</li> <li>- Town: 635,000 €</li> <li>- State: 2,031,000 €</li> </ul> The rest is covered by own funds.

#### Objectives and Results

Logirep's mission is to provide a satisfactory rental solution for families with limited resources who cannot find housing in the private sector. This project, initiated within the frame of the EU Sureuro R&D project, was established to demonstrate that a sustainable refurbishment can improve the quality of live of tenant while reducing in a significant manner operational costs.



Figure 1: Before and after the renovation.

#### Renovation concept

##### Key renovation features

- Insulation of façade
- Super low energy windows
- Solar collectors for DHW

## State-of-the-art

### Before renovation

#### Constructions [U-values: W/m<sup>2</sup>K]

- Insulation of roof [0.55]
- Non-insulated façades
- Single glazing [5.1]<sup>1</sup>

#### Installations

- Urban district heating, conventional efficiency
- Undersized equipment from district heating
- Old DC Fan

### After renovation

#### Constructions [U-values: W/m<sup>2</sup>K]

- Insulation of roof [0.55]
- Insulation of façades (external, 10 cm PSE) [0.39]
- High efficiency glazing [1.8]<sup>2</sup>

#### Installations

- 900 m<sup>2</sup> of solar collectors for DHW
- Two sub plant heating system created
- Renovation of the district heating system
- Efficient DC fans

## Energy saving and monitoring

#### Energy consumption before renovation:

Heating (kWh/m <sup>2</sup> ):	165
DHW (kWh/m <sup>2</sup> ):	62
Electricity (kWh/m <sup>2</sup> ):	19

#### Energy consumption after renovation:

Heating (kWh/m <sup>2</sup> ):	120
DHW (kWh/m <sup>2</sup> ):	42
Electricity (kWh/m <sup>2</sup> ):	11

Percentage saving<sup>3</sup>: 42%

## Additional information

- The six 5-storey buildings have received new pitched roofs. Prefabricated roof modules of flat plate solar collectors have been installed on the south-west facing part of the new roofs.
- Additional works, not related to energy-saving measures such as water saving or gardening have been undertaken, improving the quality of life of tenant.
- Tenants have been strongly associated to the decision-making process. The partnership between local players (housing company, local authorities) and tenant associations has ensured a better adaptation of neighbourhood management and continuous maintenance.

## Lessons learned and conclusions

- The building has so far worked fairly well, except for minor problems with the active solar system. The main problems have been leakages and, as a result of this, lower solar output than expected. The solar collector was originally designed as a totally integrated building component.
- Savings are less than expected because residents' behaviour, such as occupancy rates, heating settings, and hot water use, which were not taken into consideration sufficiently.

## References

SUREURO - Sustainable Refurbishment in Europe - Contract n° EVK4-1999-00008  
<http://www.sureuro.com/New%20mtrl/Pilots/Logirep.pdf>

<sup>1</sup> Total U-value of glazing and the window frame

<sup>2</sup> U-value of the glazing only

<sup>3</sup> Compared to the situation before renovation