



Saint Martin d'Hères (France)

**43% energy saving for heating and DHW.
Greenhouse balcony
Solar domestic hot water .**

Project data

Location, address:	Grenoble suburb												
Region:	Rhône Alpes												
Surroundings:	City												
Climate:	Mountain												
Heating degree days:	2750												
Year of construction and renovation:	Renovation: 2003-2005												
Typology:	Apartment buildings.												
No of dwellings:	354 flats												
Total floor area:	24 600 m ²												
Owner:	OPAC 38 (social housing company)												
Architect and Builder:	Jauré / Archimedes architects												
Costs of energy saving measures:	The cost of the entire programme is 8.6 M€ of which 2 M€ for energy saving measures												
Renovation financed by:	<table> <tr> <td>EU</td><td>0.5 M€</td></tr> <tr> <td>ADEME</td><td>0.2 M€</td></tr> <tr> <td>Region</td><td>0.4 M€</td></tr> <tr> <td>Department</td><td>0.2 M€</td></tr> <tr> <td>City</td><td>0.7 M€</td></tr> <tr> <td colspan="2">The rest is financed by own fund</td></tr> </table>	EU	0.5 M€	ADEME	0.2 M€	Region	0.4 M€	Department	0.2 M€	City	0.7 M€	The rest is financed by own fund	
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Objectives and Results

As a social housing company, OPAC 38 set up a sustainable development process through the implementation of its own Diary 21. The H. Wallon refurbishment project was aimed at reducing energy consumption of the building as well as maintenance costs while ensuring a social benefit for tenant through for instance the creation of additional buffer space.



Figure 1: Before and after the renovation.

Renovation concept

Key renovation features

- Solar collectors for domestic hot water
- Passive solar design
- Glazed balconies for preheating ventilation air before it enters the apartment.

State-of-the-art

Before renovation

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

Installations

After renovation

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

Glazed balconies

Installations

450 m² of solar collectors providing 50% of annual DHW load
Fresh air preheating

Energy saving and monitoring

Energy consumption **before** renovation: NA

Energy consumption **after** renovation: NA

Percentage saving¹: **43%**

Estimated saving for heating and DHW:

325€ / year / flat



Additional information

- Old heat boilers have been replaced by district heating plant.
- From an energy efficiency point of view, greenhouses are not useful on every balcony (especially on north-east orientated balcony) but all tenants wanted them everywhere. This additional space has been considered by tenants as a pleasant and casual place.
- The rent has been increased by 10%. This increase is balanced by the running cost decrease.

Lessons learned and conclusions

Tenants have been associated to the decision-making process. Together with the social housing company, it was decided not to set up any individual calorie meter (and to keep the overall heat meter) in order to respect the principle of "thermal solidarity" between tenants.

References

<http://www.fontaine38.fr/agenda21/index.php?2006/04/26/41-visite-de-logements-geres-par-l-opac-a-saint-martin-d-heres> (FR)

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