Introduction

Saint Exupéry exists of 64 dwelling units for 200 persons in 2 buildings, situated in a village 80-km from Paris. After the ministry's public call for projects in 1993 the construction started in 1995. A special effort has been required from all the builders in respecting the solid waste management during the construction. The nearby TGV-railway was expected to cause high acoustic pressure in the area.

Main environmental objectives were:
- Taking into account of site constraints (wind, sun, view, etc).
- Construction waste management.
- Reduction of energy consumption.
- Good thermal comfort.
- Good quality of tenants information.

The construction phase was finished in July 97 with as main target a high energy efficiency building integrating:
- A bioclimatic design with the best solar exposition.
- A centralised and individual equipment for natural gas heating system.
- Low energy consumption lamps.

A great attention to the users' comfort:
- Summer and winter thermal comfort .
- Visual comfort by allowing daylight in all rooms and kitchens.
- Acoustic comfort.

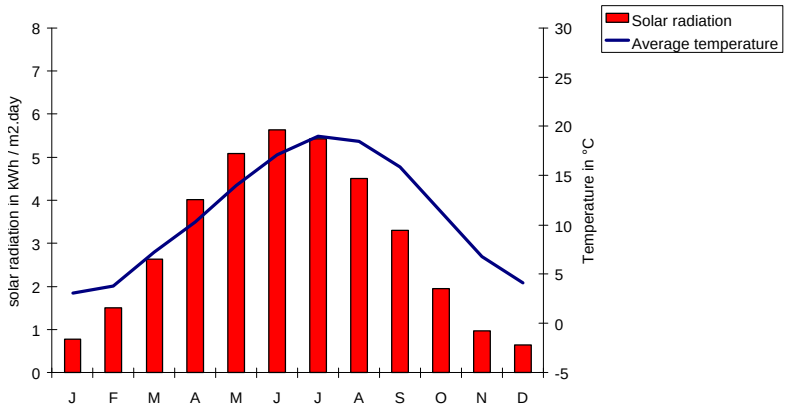
A successful co-operation with a multi-competence team including:
- An environmental consultant.
- A designer in energy efficiency building.

Context
Good practice example selected in a call for projects launched by the Ministry of Building in 1993.

Green Building Conference 1998:
The building is assessed with GBC´98

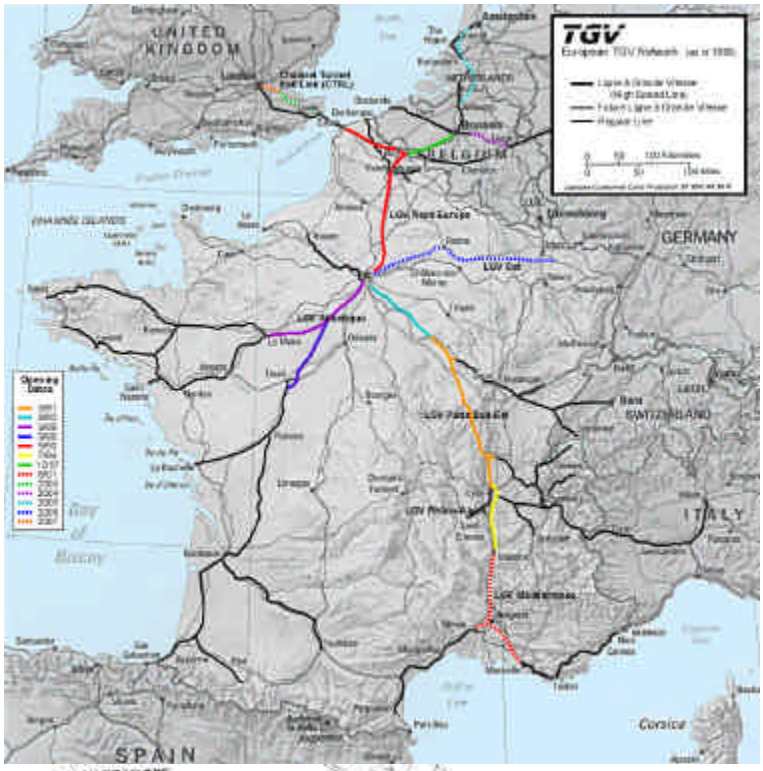
Client	*SA HLM Picardie Habitat* *Maison de l'Habitat*
Architect	*Alain Coutris*
Environmental consultants	*Michel Raoust*
Environment co-ordinator	*Robert Aiello, SPIE –CITRA*
GBTool assessment	*CSTB*
Contact person	*Sylviane Nibel* *nibel@cstb.fr*

Regional and Urban Context

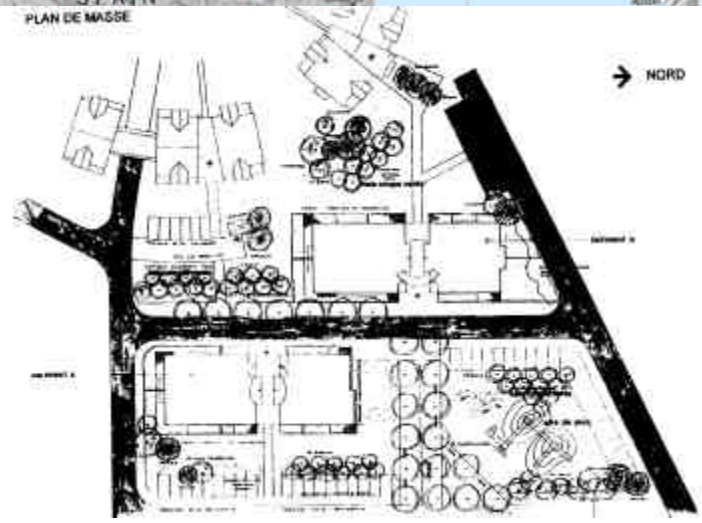


climate

Type of climate	*mild, sea climate*
Altitude (m)	*30*
Latitude	*49° N*
Longitude	*3° E*
Average ambient temp (°C)	
January	*3.1*
July	*19*
Degree days (base 18°C)	*2,259*
Global irradiation (kWh/m²)	*1,093*
Sunshine hours (h)	*1,560*



This social dwelling project has been integrated in a rural area and near the village centre. Its implantation on a marshland and a poor field could be possible with the creation of a drain included in a ZAC (Consented Planning Area).



The two buildings have been oriented to allow the best integration in the site and to offer a good indoor quality and comfort: direct sunlight, visual contact and privacy with the exterior, appropriate daylighting level.

Day and sunlight calculations are made for all rooms. In general building layout and trees are designed to avoid both noise from the tgv-railway and cold wind.

Wind studies ensure comfort for pedestrians.

Block and Building

Green building aspects of the building

- High energetic performances obtained with a strong thermal insulation of the envelope and with the treatment of the thermal bridges (MURFOR process), with ECO+ insulating glazing, with a central heating system including a condensation boiler.
- Each occupant can control its own energy consumption for heating and DHW.
- A notice details expected levels of consumption for each dwelling and gives some information on the best energy management solutions.
- Visual comfort: architectural options favouring daylight, minimum level of daylight factor, a window in all kitchens, free choice of painting colours of walls and timber.
- Acoustic comfort: specific noise attenuation through the building envelope and between dwelling units.
- Landscape solutions to limit wind effects.
- Wastemanagement: Each building party had to make a plan for waste collection and disposal in the construction phase.

Project Data	Project case		Reference case	
Construction	*1995-1997*			
Construction costs (€/m²)	683		*674*	
Urban plan				
Area (ha)	*0.9*			
Floor Area (m² gross floor area)	*5,365*			
Floor Area Ratio (m² gross floor area)	*0.6*			
Transport				
Distance to car park	*30 m*			
Distance to public transport	*200 m*			
Frequency of public transport				
Bicycle storage	*yes*			
Telecommunication	*yes*			
Waste separation				
Construction and demolition waste	*yes*			
Household waste	*no*			
Design for deconstruction	*no*			
Building Materials				
Construction	*concrete*			
Facades	*blocks*			
Roof	*carpentry & files*			
Window frames	*plastic (recyclable PVC)*			
Internal walls	*brick and gypsum*			
Recycled materials				
Insulation	**area (m²)**	**U-value (W/m²K)**	**area (m²)**	**U-value (W/m²K)**
Ground floor area (m²/bldg)	*1,216*	*0.8*		
Roof area (m²/bldg)	*1,440*	*0.2*		
External wall area (m²/bldg)	*1,400*	*0.46*		
Window area total (m²/bldg	*220*	*1.7*		
South (m²/bldg)	*280*	*2.75*		
Ventilation system				
Infiltration	*passive*			
Exhaust	*mechanical*			
Heat recovery	*no*			
Air exchange rate, heating season	*1*			
Back-up systems	**system**	**energy source**	**system**	**energy source**
Space heating	*centralised individual heating and DHW system*	*natural gas, wood*		
Domestic hot water				
Cooling	*none*			
Electricity production	*none*			
Ventilation				
Energy data	**(kWh/m²a)**		**(kWh/m²a)**	
Total energy use	*188*		*223*	
Space heating	*90*			
Space cooling	*no*			
Domestic hot water	*45*			
Electricity (total)	*131*			
Lighting	*30.2*			
Fans + pumps	*14.8*			
Small power	*83*			
Solar systems				
Passive	*none*			
Active	*none*			
PV	*none*			
Water				
Supply				
Toilet system (4, 6, 9 litres)	*4 & 6*			
Shower	*yes*			
Bath	*yes*			
Sewage				
Rainwater collection	*municipal system*			
Grey water system	*municipal system*			