RUE DE BONNE [188]

CONSTRUCTION OF 13 PASSIVE HOUSING UNITS, A PASSIVE KINDERGARTEN AND ELEMENTARY SCHOOL IN MOLENBEEK-SAINT-JEAN

Schools, collective housing - new construction

14/12

kWh/m² year
Brussels average 106

Rue de Bonne, 1080 Molenbeek-St-Jean
Client: **Commune of Molenbeek-St-Jean**
Architect: **Trait Norrenberg and Somers Architects**
Engineers: **Bureau Détang S.A., Bureau Delvaux et ATS**

- Wood wool, rock wool, recycled cellulose
- Mechanical ventilation + heat recovery N50/h < 0.6
- Thermal solar (25 m²)
- Underground heat exchanger
- Bicycle parking area and showers
- Educational kitchen gardens
- Extensive green roofs (555m²)
- Rainwater tank, storm water basin
- Natural, rubber paints
- Reuse, sorting, user guide, recycling
- Acoustic comfort

The project has two distinct facilities, both achieving the passive level: a volume comprising 13 houses and a school (kindergarten and elementary). The envelope has high-quality K12 level insulation for the houses and K14 for the school. The implemented cooling system facilitates high thermal inertia, reduces internal loads of the school, reacts with the solar gains through fixed shading devices for the school and sliding and fixed perforated blinds for the housing units and uses the building shade between them. A centralised management system acts locally and in a manner that is adapted to the specific needs of each room. The user can operate the system and manually regulate the heating, ventilation, solar shadings and artificial lighting. At the end of the day, the system reconfigures itself automatically according to the basic settings. An educational kitchen garden introduces the children to the concept of organic farming and conservation of the environment.

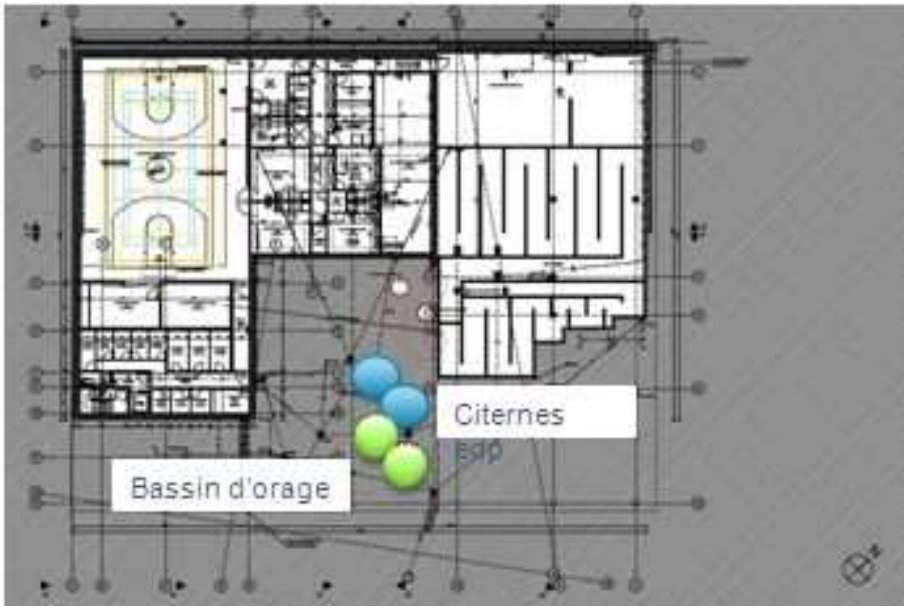
IN FIGURES

Gross area	5736 m²
Handover	March 2015
Construction costs, VAT/grants excl.	€1,433 /m²
Exemplary building grant	€418,900

The description of this building is provisional because its construction is not yet completed.

WATER: OVERCOMING WASTAGE

The consumption of drinking water is restricted to the necessary taps. The use of water is reduced by overcoming wastage: pressure limiter, time-delay taps with limited flow, infrared taps for the kindergarten, etc.
The rainwater is collected in two 20m³ concrete tanks. The overflow drains into two other buffer tanks/stormwater basin. These tanks are connected to a dispersal drain. The water tanks are used for sanitary facilities, maintenance, domestic washing machines and watering. Thus, the rainwater collected in the tanks is used, stalled during storms and drained off into the ground as surplus.
A part of the roof is landscaped with extensive green roofing. This allows water retention and reduction of water discharge into the sewer.



USER GUIDE

A user guide is provided to the school and tenants. In addition, the user is provided with data sheets indicating the choices made and the reasons behind making them (for example, the floor covering is attached with an adhesive that does not emit poisonous substances). This guide provides a series of instructions and keys to understanding that not only helps the user save energy but also prolong the life of the building and its installations, which represents an even greater amount of energy saved in the long term.

ADDED EXTRA

The existing foundation slab (invert) is reused to create an underground heat exchanger. Masonry walls are placed on this slab so as to form a labyrinth and increase the exchange area. The exchanger is accessible, which facilitates frequent maintenance and upkeep.

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