



RUE ROYALE 89 [178]

A BUILDING BROUGHT TO LIFE

Office - Renovation

Rue Royale 89, 1000 Brussels

Client: **Ministère de la Communauté Française**

Architect: **Bureau Ledroit-Pierret-Polet**

Engineers: **JZH & Partners, DTS & co, Enesta, BANP**

29

kWh/m² year
Brussels average
106

K25
 $U_{avg}=0.54W/m^2.K$



$\eta=90\%$
 $n50 = 2h^{-1}$



External solar shadings,
free cooling



Bicycle area, road for
persons with reduced
mobility



Green facade



Extensive (156m²) and
intensive (31m²) green
roof



Judicious use of water,
Rainwater tank (5m³)



Resol, cellulose,
linoleum, FSC wood



Reinforced acoustic
insulation



The objective of this high-performance renovation is to achieve a 'very low energy' level and will benefit the Conseil Supérieur de l'Audiovisuel (National Broadcasting Authority).

The main building has 2 lateral wings and a rear section. The architectural attributes are preserved and the clarification of the structural diagram helps give the rooms large dimensions and allow plenty of natural light inside. The project addressed the sustainability of the construction by saving on means and material, allowing the existing structure to reveal its full acceptance potential for future functions.

The project is complemented by high-performance and profitable techniques like the installation of a double flow ventilation system with heat recovery, a condensing gas boiler and the reuse of rainwater. The environmental aspect is also addressed by the installation of green roofs and facades as well as the use of environmental-friendly materials.

IN FIGURES

Gross area	1,265 m ²
Handover	Dec. 2014
Construction costs, VAT/grants excl.	€1,280 /m ²
Exemplary building grant	€103,140



RETURNS ON INVESTMENT

The energy conservation measures represent an additional investment that must be weighed against the savings. The project has calculated the time for return on investment based on the following costs: gas: €0.08/kWh, electricity: €0.17kWh, water: €3.6/m³.

- Double ventilation flow with heat recovery vs type C unit:
Heat gain +/-€2900/year. Additional costs +/-€21,000 taxes incl. => TRS +/- 7 years
- Regulation by CO2 sensors vs ventilation with fixed airflow (3 rooms concerned):
Electricity gain +/-€770/year. Additional costs +/-€8,500 taxes incl. => TRS +/- 11 years
- Rainwater recovery vs tap water consumption (toilets and surrounding areas):
Water gain +/-€320/year. Additional costs +/- €6,000 taxes incl. => TRS +/- 19 years
- High-quality airtightness (1.5h⁻¹) vs airtightness with no specific attention (4h⁻¹)
Heat gain +/-€660/year. Additional costs +/-€13,000taxes incl. => TRS +/- 20 years.
- Triple glazing vs double glazing (glass surface of 150m²)
Heat gain +/-€330/year. Additional costs +/-€20,000taxes incl. => TRS +/- 60 years

SUSTAINABILITY OF THE CONSTRUCTION

The sustainability of the construction is ensured by implementing the following measures

- **Construction of an efficient and simple building**
Preservation of the existing structural system (facades, staircase, main partitioning) and removal of secondary partitions add later. The spatial structure is supple and flexible allowing possibilities of transformation into housing units or multi-purpose areas (exhibition, workshops, etc.). The flexibility of the building's spatial structure gives it sustainability over time.
- **Simple and robust materials**
The materials used have been chosen as they require minimum maintenance. The frames are made of unprocessed hardwood, the floors are made of smooth concrete and the linoleum used can be sanded in case of wear and tear and the wall coverings have a simple plaster coating.
- **Easy replacement of parts**
The new parts are installed so as to be disassembled (use of prefabricated parts and mechanical fasteners). The lightweight partition walls are constructed above the floor coverings. The electrical network is not supported by the lightweight partition walls, which leaves the option of removing them in the future open.

ADDED EXTRA

In order to reduce the operations carried out on the structure and preserve the existing elements as far as possible, the floor deposits that are supported by the facades will be preserved. The ends of the deposits will be painted with primer to allow effective adhesion of the connection tapes with the ceiling.

