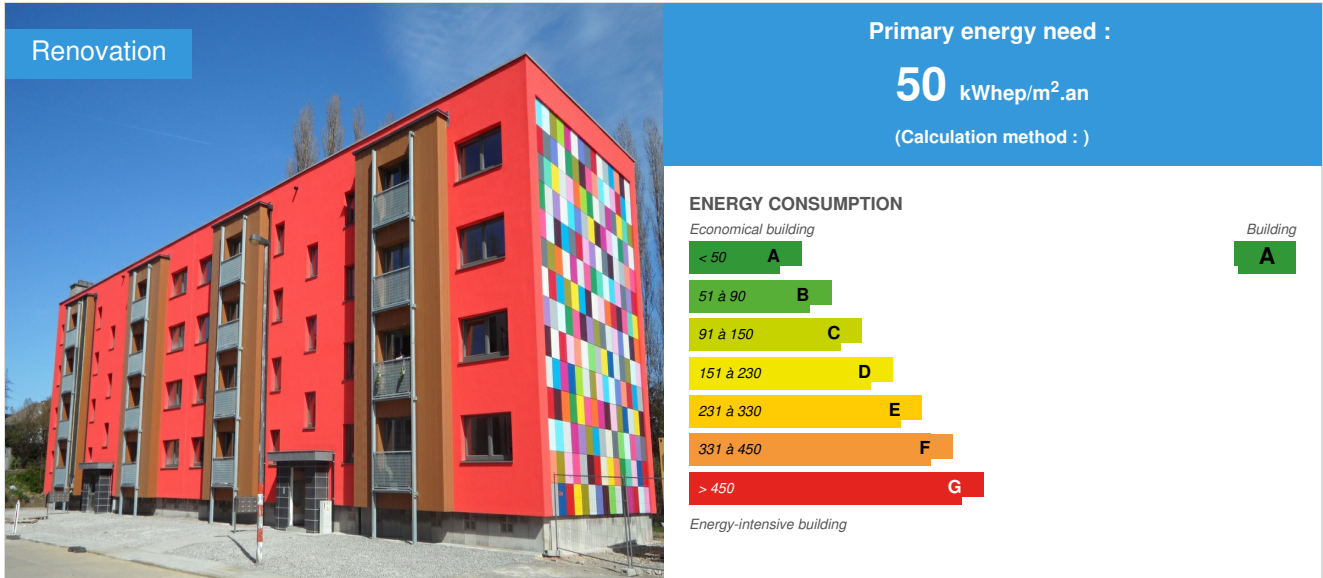


## Energy retrofitting of 48 units (Cité du Centenaire)

by Nathalie ABRASSART / 2017-05-23 10:22:17 / Belgique / 9261 / FR



**Building Type** : Collective housing < 50m  
**Construction Year** : 2016  
**Delivery year** : 2017  
**Address 1 - street** : Rue Trieu Kaisin 6061 MONTIGNIES-SUR-SAMBRE, Belgique  
**Climate zone** : [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area** : 3 420 m<sup>2</sup> SHON  
**Construction/refurbishment cost** : 2 997 329 €  
**Cost/m2** : 876.41 €/m<sup>2</sup>

Proposed by :



### General information

The energy renovation of 48 units is part of the rehabilitation of a social housing estate "La cité du Centenaire", which in its original situation included 7 identical 4 levels buildings with a repetitive layout as well as 2 batteries of 15 garages. Each building therefore had 12 apartments, totaling 84 units.

The aim of the intervention was to:

- The demolition of the 30 garages and a 12 units block;
- Energy retrofitting of 6 buildings, or 72 units;
- The construction of a building of 12 apartments on the part of the land made free after demolition of the garages;
- Development of the surrounding area.

### Building users opinion

24 apartments have been occupied for over a year and give complete satisfaction to the tenants.

## See more details about this project

<http://www.startech-group.eu/> <http://www.hainauthorizons.be/cite-centenaire/> <http://www.maisonpassive.be/IMG/pdf/-36.pdf>

## Data reliability

Self-declared

## Stakeholders

### Stakeholders

Function : Designer

Startech Management Group

Nathalie Abrassart - [info@startech-group.eu](mailto:info@startech-group.eu) - Tél 0032 65/36.46.07

<http://www.startech-group.eu/>

Complete Mission of architecture and special techniques

Function : Contractor

La Sambrienne

Fabrice Jacqmain

<http://www.lasambrienne.be/>

Function : Company

R. De Cock

<http://www.entreprises-decock.com/>

Function : Structures calculist

Stabili.D

Denis Schumer - [info@stabilid.be](mailto:info@stabilid.be)

<http://stabilid.be/>

Stability studies

## Contracting method

Other methods

## Owner approach of sustainability

The aim of the owner of the building against this renovation is articulated on three axes: - Increase the living space of the dwellings to meet current standards, - Improve the energy performance of buildings, - Replace the existing technical installations with a view to Improve the comfort and safety of occupants.

## Architectural description

The main concern of Startech Management Group's intervention is to create a pleasant and generous living environment for the occupants in a neighborhood on a human scale. The objectives are: - To give a residential character and to personalize the buildings by asserting each building as a different entity in order to break their repetitive and depreciative character, - To adopt a sobriety in the architectural and artistic expression by the employment of a clear vocabulary aimed at efficiency by a balanced choice of materials, selected above all for their environmental performance and their effect on the aesthetics of the premises, - Improve the comfort of the inhabitants by increasing the living area of the dwellings, -Propose a range of housing units that allow a wide range of housing (from 1 to 3 bedrooms), -Limite the energy costs of the tenants by favoring the passive design for the renovation of the houses, -Reduce the environmental footprint, -To favor the modes of soft travel by reducing the pressure generated by the presence of the automobile. The project is therefore not limited to a simple renovation of housing but to a global overhaul and a complete requalification of the neighborhood. The buildings were designed by the architect Victor Bourgeois in 1957 on the model of a garden city. In 1978, the architectural aspect of the buildings was denatured by the installation, on the façades, A mineral wool insulation of 4 cm thickness and cladding in asbestos-cement panels of white color which has very poorly aged. Stained wooden chassis replaced the old white painted frames, without respecting the original divisions. As a result of these different operations, the initial architectural value was lost. Reinforced concrete balconies and lintels were thermal bridges that had not been solved in 1978, when the facades insulation became insufficient to meet current standards. After removing the cladding, it was no longer possible to restore the original appearance of these buildings. Moreover, the habitable surfaces no longer met the current standards of habitability. In order to meet current requirements, different intervention options were analyzed. The configuration of the reinforced concrete frame with cast-in-place floor provided the possibility of altering the spaces. The buildings have therefore been adapted to current standards in terms of thermal insulation, ventilation, habitability, comfort and thus find a new life. The only original elements that have been conserved are the floor coverings of the common entrance halls and landings and the flights of stairs in polished granite concrete which have been restored. Given that the height of the guardrails was too low, they were overcome, for safety reasons, with a continuous stainless steel handrail. The completely renovated facades are animated by the addition of structures that support the new balconies. They constitute complementary volumes that mark the verticality and therefore the relief breaks the monotony of the facades. The appearance of the

common entrances is improved and identified by a new salient volume. The use of materials from a balanced chromatic choice gives a new identity and a strong image of the buildings. An artistic integration had been planned by the architect Bourgeois in a neighboring building (rue Trieu Kaisin n ° 74) by the realization of a mural painted by the artist Jo Delahaut. Unfortunately, it has now disappeared. In the same spirit, an artistic integration was carried out to dress the gable of one of the buildings, which had become blind after demolition, by means of mineral wool panels representing the colors collected in the demolished building, as a testimony of past lives . This collection was carried out under the direction of the artist Léopoldine Roux in the framework of workshops with the children of the school of nearby cities. This artistic intervention was the subject of a selection and funding following a call for projects launched by the commission of arts of the French community of Belgium in collaboration with the SWL. The red tint of the plasterwork of the renovated buildings was chosen in reinterpretation of Victor Bourgeois's objective, which wrote in the review "La Maison" n ° 10 of October 1954: "the colors of the blocks also establish a link with the agglomeration ; the parallelepipeds on the periphery are red - a red a little warmer than that of neighboring houses - and showcase the buildings of the center, higher and lighter".

## Energy

### Energy consumption

Primary energy need : 50,00 kWh/m<sup>2</sup>.an

Primary energy need for standard building : 170,00 kWh/m<sup>2</sup>.an

Calculation method :

Final Energy : 42,00 kWh/m<sup>2</sup>.an

Breakdown for energy consumption :

Heating 36% Domestic hot water 46% Auxiliaries 17%

Initial consumption : 208,00 kWh/m<sup>2</sup>.an

### Envelope performance

Envelope U-Value : 0,18 W.m<sup>-2</sup>.K<sup>-1</sup>

More information :

-Isolation of the floor covering underground (thickness 12 cm PUR), -Isolation of the facades by means of 24 cm of graphite polystyrene coated with plaster or 30 cm mineral wool covered by a cladding in mineral wool compressed, -Insulation of Roofing by means of 2 alternating layers of PUR ep. 14 cm, -Replacement of exterior joinery by passive chassis equipped with triple glazing -Replacement of the cupola at the top of the common staircase by an outlet of smokes with improved thermal insulation -Replacement of the access door to the staircase of cellars by a door with reinforced thermal insulation.

Building Compactness Coefficient : 2,15

Indicator : n50

Air Tightness Value : 1,40

## Renewables & systems

### Systems

Heating system :

- Low temperature gas boiler
- Water radiator

Hot water system :

- Low temperature gas boiler

Cooling system :

- No cooling system

Ventilation system :

- Double flow heat exchanger

Renewable systems :

- No renewable energy systems

Solutions enhancing nature free gains :

Improvement of the insulating envelope, suppression of thermal bridges, reinforcement of the air tightness.

### Smart Building

Users' opinion on the Smart Building functions : The access control of the common areas (staircase, bike room, trash room ...) is carried out by an electronic system with badge reader and code keypad, which also allows access to external maintenance services , meter reading ...

## Environment

### Urban environment

The city of Centenaire is located in the heart of an urban area well served by public transport (bus and metro lines), close to public facilities (nurseries, schools, hospitals, etc.), shops and services, necessary base to project a city in the sustainable. In order to reduce the car pressure due to the through-ways, mild travel modes are favored on the site and the surrounding areas are treated accordingly, both for pedestrians and for cyclists. Specific equipment for bicycles is provided and the pedestrian paths connect the site to the various existing pedestrian networks.

Land plot area : 3 040,00 m<sup>2</sup>

Built-up area : 58,00 %

Green space : 760,00

## Products

### Product

Natural Rockpanel Facing Panels

Rockpanel

ROCKWOOL BV / Rockpanel Oud Sluisstraat 5 2110 Wijnegem Tel.: +32 (2) 715 68 42 Fax: +32 (2) 715 68 10

<http://www.rockpanel.be>

Product category : Gros œuvre / Structure, maçonnerie, façade

Rockpanel panels have been developed to allow a fast, easy aesthetic finish of façades and roofing fittings. These panels work like wood while having the same durability properties as stone. They resist without damage to extreme temperatures and weather, and are incombustible, 100% recyclable and easy to maintain. Climatic conditions modify the exterior appearance of this durable material available in panels. The sunlight naturally patina the surface and discolors the panels in the same way as other natural materials like wood, concrete, steel, etc. Each microclimate has a unique effect on Rockpanel Natural. This product is therefore particularly innovative and is therefore mainly used in combination with other basic natural materials.



This product has been advocated by its natural brown appearance which requires no protection which makes it durable over time. In addition, in the case of claws, it is enough to sand slightly to return to the initial appearance. The cladding is made up of elements of small dimensions easily replaceable in case of necessity (vandalism, shocks ...). The artistic integration on a blind gable was facilitated by the use of pre-painted panels (Rockpanel Colors) in various shades completed by panels that were painted by the artist (to make the shades not available) . The manufacturer carried out a Cradle to Cradle study: - Raw materials: stone (natural), available in abundance, 20 to 30% recycled material, local supply; - Processing: the production waste is recycled to 100%, 1 m<sup>3</sup> of raw material gives 400 m<sup>2</sup> of panels, water-based paints, recycling units; - Construction & use: safe and easy to work, low maintenance, durability; - End-of-life cycle: 100% recyclable, no derating (c2c).

## Costs

## Health and comfort

### Indoor Air quality

The installation of a dual-flow ventilation system ensures good indoor air quality for the occupants.

### Comfort

**Health & comfort :** The comfort of the inhabitants is enhanced by the increase in the living area of the dwellings. The surface of the existing balconies is added to the living room as well as the kitchen by the demolition of the dividing partition, to constitute a single and vast living space. Moreover, new balconies on independent structure and storage spaces are arranged. The materials are chosen without organic volatile compounds (VOCs) and so as not to affect the health of the workers and the inhabitants. The dimensioning of the bays in the living room is optimized to take full advantage of natural lighting. A vegetated area constitutes in screen raised in front of the facades of the apartments located on the ground floor thus creating a natural protection.

**Acoustic comfort :** The current standards for acoustics have been met.

## Carbon

## GHG emissions

GHG in use : 11,75 KgCO<sub>2</sub>/m<sup>2</sup>/an

Methodology used :

Data obtained from the PEB certificates of the apartments.

GHG before use : 40,00 KgCO<sub>2</sub> /m<sup>2</sup>

Building lifetime : 50,00 an(s)

, ie xx in use years : 3.4

## Contest

### Building candidate in the category



Energie & Climats Tempérés



Coup de Cœur des Internautes



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