


## Project "Pearl"

by Stéphane Moetwil / 2019-04-02 14:46:46 / Belgique / 6380 / FR

New Construction



Primary energy need :

# 13

 kWhep/m<sup>2</sup>.an  
 (Calculation method : Other )

**ENERGY CONSUMPTION**

Consumption Range (kWhep/m <sup>2</sup> .an)	Grade	Building Grade
< 50	A	A
51 à 90	B	
91 à 150	C	
151 à 230	D	
231 à 330	E	
331 à 450	F	
> 450	G	

*Economical building* (Grades A-C) | *Energy-intensive building* (Grades D-G)

**Building Type** : Collective housing < 50m  
**Construction Year** : 2017  
**Delivery year** : 2018  
**Address 1 - street** : Rue de la Perle 3 1080 BRUXELLES, Belgique  
**Climate zone** : [Cwb] Mild, dry winter, cool and wet summer.

**Net Floor Area** : 1 950 m<sup>2</sup> Superficie útil  
**Construction/refurbishment cost** : 2 300 000 €  
**Number of Dwelling** : 17 Dwelling  
**Cost/m2** : 1179.49 €/m<sup>2</sup>

**Certifications :**



### General information

The project concerns the construction of an apartment building consisting of 17 passive housing and a common room. The plot is located in a very urban and dense site in Brussels. The complete structure of the building is made of CLT (Cross Laminated Timber).

### Data reliability

Self-declared

### Calculations

## Contractor

Name : Habitat & Humanisme

Contact : Julie Rondier +32 2 893 08 46 [julie@habitat-humanisme.be](mailto:julie@habitat-humanisme.be) (rue d'Edimbourg 26, 1050 Bruxelles)

<http://www.habitat-humanisme.be/>

## Construction Manager

Name : DXA.ARCHI

Contact : Stéphane Moetwil +32 2 216 36 19 [smoetwil@dxa.archi](mailto:smoetwil@dxa.archi) (rue de Stassart 124 à 1050 Bruxelles)

<http://www.dxa.archi/>

## Stakeholders

Function : Structures calculist

ney & partners WOW

Alexandre Rossignon

[www.ney.be](http://www.ney.be)

Complete follow-up of the "stability" mission

Function : Construction company

Amart sa

Stéphane Demeure

[www.amart.be/](http://www.amart.be/)

General contractor

Function :

laminated timber solutions

Philippe Courtoy

[www.laminatedtimbersolutions.be](http://www.laminatedtimbersolutions.be)

wood structure

## Owner approach of sustainability

The client was determined to build the entire structural work in CLT (Cross laminated timber) which allowed the designer to propose to use the structural work as finishing materials for interior facades and ceilings in each dwelling. This economic gain is also environmentally friendly for reducing the amount of materials used in the construction site.

## Architectural description

The entrance to the building is on the side of the street de la Perle, and takes advantage of the release of the Street du Niveau to improve its readability.

It is fully open to the outside and protected from the wind, naturally lit and gives a bird's eye view of the common garden. The entrance to the ground floor dwellings is developed on the side of the garden. This space is equipped with benches, low plantings in front of the rear facade, shrubs and covered and secure bike parking.

The common area of the ground floor, has a storage for strollers and bicycles, directly accessible from the entrance. The circulation spaces and access to the apartments are sized to create places of conviviality. The common areas are all located on the ground floor of the building.

The program consists of 4 studios, including 1 adapted for disabled people, 3 1 bedroom apartments and 11 duplex 4 bedrooms. 17 apartments have their outdoor patio area. All accommodations are crossing. The terraces are developed on the south / east side of the project, their easy use will participate in the life of the rue de la Perle and rue du Cinéma. Each housing has a storage space and technical room. The duplexes also benefit from another storage space arranged along the night hall.

The net living areas of the living rooms, dining room and kitchens are increased in relation to the minimum necessary requirements according to the number of rooms. The habitability of the dwellings is by this principle also increased. The circulations of the dwellings are optimized to dedicate more space to the living rooms and mainly to the stay which receives the whole family.

## Energy

### Energy consumption

Primary energy need : 13,00 kWhep/m<sup>2</sup>.an

Primary energy need for standard building : 115,00 kWhep/m<sup>2</sup>.an

Calculation method : Other

## Envelope performance

Indicator : EN 13829 - q50 » (en m3/h.m3)

Air Tightness Value : 0,60

## Renewables & systems

### Systems

Heating system :

- Condensing gas boiler

Hot water system :

- Condensing gas boiler

Cooling system :

- No cooling system

Ventilation system :

- Double flow heat exchanger

Renewable systems :

- Solar Thermal

## Environment

### Urban environment

The project is located in a high density urban environment in the center of the city of Brussels. The common garden is perceived from the outside and extends the public space to participate. The articulation of the building on its angle softens the acute angle formed by the two streets.

Land plot area : 600,00 m<sup>2</sup>

Built-up area : 480,00 %

Green space : 120,00

## Products

### Product

CLT

Lamcol

Philippe Courtoy

<http://www.laminatedtimbersolutions.be>

Product category : Table 'c21\_spain.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '1'

Wood structure

materials suitable for housing buildings



## Costs

## Construction and exploitation costs

Cost of studies : 140 000 €

Total cost of the building : 2 300 000 €

### Health and comfort

#### Water management

Consumption of harvested rainwater : 15 000,00 m<sup>3</sup>

#### Indoor Air quality

The hygienic air is continuously supplied in the housing by the ventilation system with double flow. Air filters purify any polluting particles contained in the air brought. They are changing once a year.

#### Comfort

##### Health & comfort :

The hygrometry of the building is self-regulating by structural elements in CLT wood of the building left voluntarily visible. The wood absorbs the water contained in the air if the percentage exceeds the average rate. Conversely, in a drier period, the wood will return the water into the housing atmosphere.

##### Acoustic comfort :

The following elements provide good acoustic comfort to housing: -The building is equipped with triple glazing.-Excellent airtightness of the envelope.-High performance insulation. 22cm of mineral wool.-Wood absorbs airborne noise better than traditional finishing.

### Contest

#### Reasons for participating in the competition(s)

##### Construction technique:

The structural work is made in CLT (Cross Laminated Timber), which allowed to mount the complete envelope in eight weeks. This material does not release CO<sub>2</sub> for its production but it has stored it throughout its life. CLT suppresses thermal bridges. Thanks to the size of the CLT panels, the number of joints is reduced and the airtightness is improved.

##### Special techniques:

- > Double flow ventilation, yield > 83%.
- > Triple glazing, mixed wood / aluminum frame, global  $U_w = 0.88W / m^2k$ .
- > Water management, 400m<sup>2</sup> green roof and 15,000 liter rainwater cistern (flushing and cleaning of common areas).
- > Solar thermal panels for domestic hot water.
- > The main insulation of the envelope (facade and roof) is made of high density mineral wool 45kg / m<sup>3</sup> over a thickness of 22cm.  $\lambda = 0.035W / m^2k$ .
- > The party walls are insulated by a 2 cm vacuum and 6 cm of HD mineral wool. The floor tiles between the dwellings are insulated with 6 cm of mineral wool HD
- > Airtightness  $n_{50} = 0.6 h^{-1}$

#### Building candidate in the category



Energie & Climats Tempérés





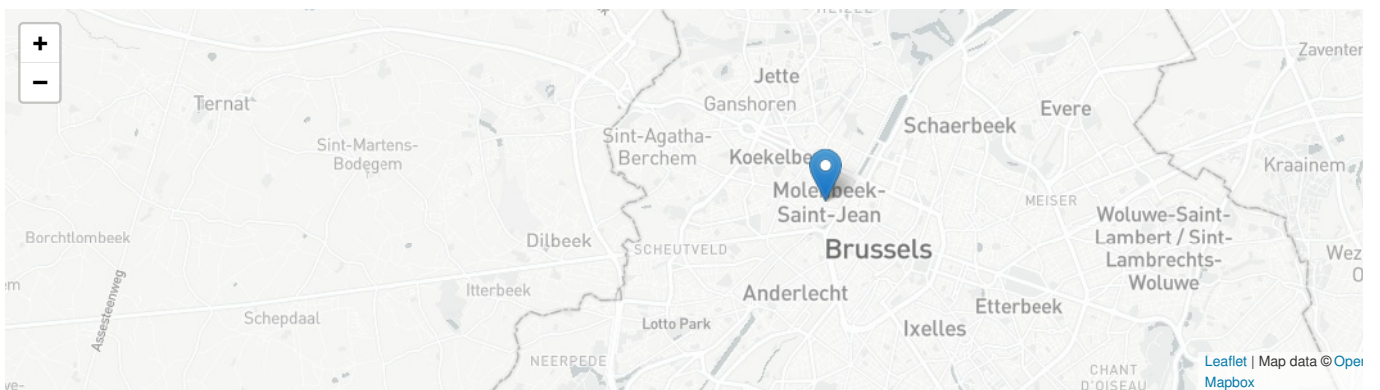
Bas Carbone



Santé & Confort



Prix du public



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