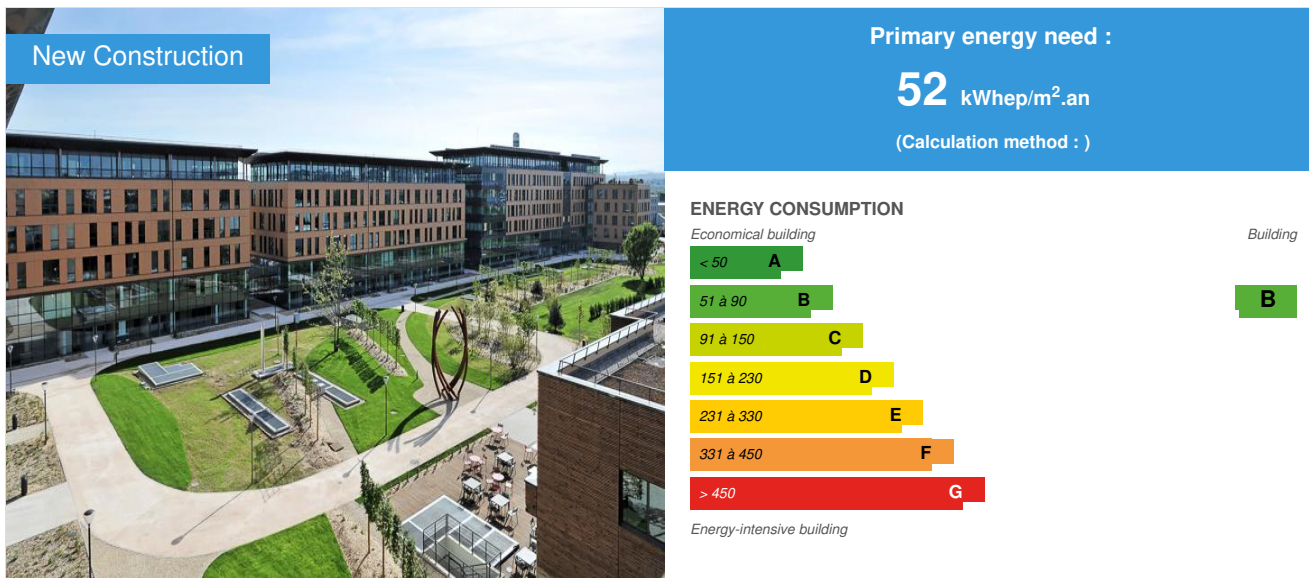


## Jules Carteret Campus

by ludovic chambe / 2015-06-22 16:28:31 / France / 15604 / FR



**Building Type :** Office building < 28m  
**Construction Year :** 2015  
**Delivery year :** 2015  
**Address 1 - street :** 69007 LYON, France  
**Climate zone :** [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area :** 35 091 m²  
**Construction/refurbishment cost :** 85 000 000 €  
**Cost/m² :** 2422.27 €/m²

**Certifications :**



### General information

The property complex is composed of:

- 4 Office buildings
- A service building including restaurants, meeting rooms, nursery and auditorium
- A common parking lot on two parking levels in the basement with access in each building
- A landscaped garden largely composed of native species and a carpet formed by infiltration tunnels to infiltrate rainwater and ensure a zero leakage rate.

### Sustainable development approach of the project owner

The project aims to be the communication vehicle of PLASTIC OMNIUM values. It reflects the commitment of the company as local and responsible player in daily community activities (as management of waste, recycling etc) as well as international contractor with strong proposals and "Green" innovative solutions. The

project responds to PLASTIC OMNIUM ambitions in relation with future users, local partners (City of Lyon, ADEME ...) and also within the company itself. Creating sustainable and lasting partnerships between employees.

The operation aims a triple environmental certification:

HQE - Out-standing  
BREEAM - Very Good  
LEED - Silver

The main objective of contracting authorities is offer to users, healthy and comfortable buildings, consuming low energy, using innovative systems and holding high environmental quality regardless the topic (water management, waste, integration of the building into the context, ect.)  
In sustainability, the project manager wanted to build a project according to 2050' technical requirements and regulations.

## Architectural description

The property complex is composed of:

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## Building users opinion

As part of building' environmental certifications, a seasonal commissioning mission will be conducted and will track occupant satisfaction after their relocation.

## Stakeholders

### Stakeholders

Function : Contractor

Compagnie Plastic Omnium

<http://www.plasticomnium.com/fr/>

Function : Assistance to the Contracting Authority

CBRE Project

[http://www.cbre.fr/fr\\_fr](http://www.cbre.fr/fr_fr)

Function : Designer

ROBELIN Architecte

Function : Thermal consultancy agency

SQUARE

<http://www.square-ing.fr/>

Function : Other consultancy agency

WATT&KA

In charge of environmental certification of the building

Function : Company

PITANCE - LAMY

## Contracting method

General Contractor

## Type of market

Table 'c21\_luxembourg.rex\_market\_type' doesn't exist

## Energy

## Energy consumption

Primary energy need : 52,00 kWh/m<sup>2</sup>.an

Primary energy need for standard building : 110,00 kWh/m<sup>2</sup>.an

Calculation method :

Breakdown for energy consumption : Heating: 9.41% Cooling: ECS 4.57%: 4.28% Auxiliary: 11.12% Internal lighting: 13.86% Outdoor lighting: 0.40% car lighting: 4% Office: Air conditioning 22.24% LT Transform: 17.68% Elevator: 12.44%

## Real final energy consumption

Final Energy : 49,00 kWh/m<sup>2</sup>.an

## Envelope performance

Envelope U-Value : 0,72 W.m<sup>-2</sup>.K<sup>-1</sup>

More information :

The features that helped limit energy consumption and ensure good thermal comfort to the occupants:

- Argon-filled double glazing (performance aluminum joinery: 1.4 W: m<sup>2</sup>.K)
- Careful Airtightness to obtain the following results:

Bldg A: 1 (m<sup>3</sup> / h) / m<sup>2</sup> to 4Pa

Bldg B: 0.39 (m<sup>3</sup> / h) / m<sup>2</sup> to 4Pa

Bldg C: 0.62 (m<sup>3</sup> / h) / m<sup>2</sup> to 4 Pa

Bldg D: 0.87 (m<sup>3</sup> / h) / m<sup>2</sup> to 4 Pa

- The sun breakers on exposed facades manage based solar gain complemented by caps in lighters.
- A large area of glass walls allows enjoying of natural light and free solar gain in winter. In this way, significant savings on lighting and heating are carried out. To make this architectural choice profitable, double glazing performances are different depending on buildings directions.
- High level of insulation (between 12 and 16cm insulating in walls, the roof 16 and floor 16).
- The plan trees on the south create a plant screen in summer and take advantage of solar gain in winter
- Very compact buildings limiting walls with heat losses.

Building Compactness Coefficient : 0,26

Indicator :

Air Tightness Value : 0,79

## Renewables & systems

### Systems

Heating system :

- Geothermal heat pump

Hot water system :

- Individual electric boiler

Cooling system :

- Geothermal heat pump
- Chilled Beam

Ventilation system :

- Nocturnal Over ventilation
- Double flow heat exchanger

Renewable systems :

- Solar photovoltaic
- Heat pump (geothermal)

Renewable energy production : 22,00 %

Other information on HVAC :

The thermofrigopompes (TFP) water type / underground water simultaneously feed on heating and cooling buildings.

The photovoltaic panels production is used directly in the building. Therefore, is no electricity resale. They are installed on roof railings and facing south. 240 m<sup>2</sup> of panels are installed, 150 high-performance modules (333 W / m<sup>2</sup>).

## Smart Building

### BMS :

The power meters are certified MID (Measuring Instruments Directive) and energy consumption data is stored and analyzed. Sub-counts provide access to consumption separately the following equipment:

## Environment

### Urban environment

Land plot area : 17 238,00 m<sup>2</sup>

Built-up area : 40,50 %

Green space : 5 412,00

The creation of Jules Carteret campus is part of the reconversion of the Gerland district, a neighborhood in deep transformation. The campus will serve as a foundation to the requalification of this district. Additional bike paths were created around campus to join the already existing track. Green spaces are visible from public roads and from neighboring buildings to enhance the views of residents.

## Products

### Product

Rooms retention / infiltration

StormTech

+31 (0)10-299-6410

<http://stormtech.com/>

Product category : Aménagement extérieurs / Gestion des eaux pluviales

Infiltration mats compound tunnel structures to infiltrate the entire project rainwater and to provide a zero leakage rate.

Meets environmental standards



Monocrystalline Photovoltaic Solar Panel

BenQ Solar

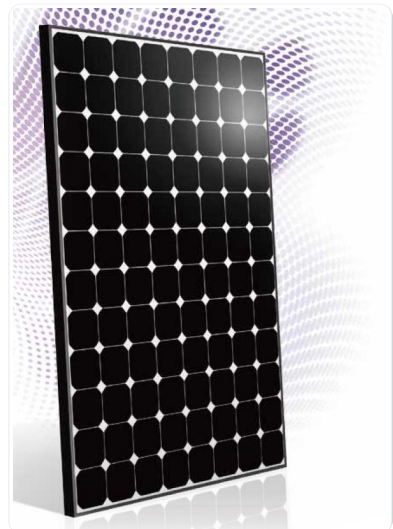
+886-3-500-8899

<http://benqsolar.com>

Product category : Gros œuvre / Charpente, couverture, étanchéité

The production of photovoltaic panels is used directly in the building. There is no electricity resale. They are installed on roof railings and facing south. 240 m<sup>2</sup> of panels are installed, 150 high-performance modules (333 W / m<sup>2</sup>).

Meets the environmental requirements of the operation



xxx

xxx

xxx

## Costs

### Water management

Consumption from water network : 7 473,00 m<sup>3</sup>

Consumption of harvested rainwater : 1 840,00 m<sup>3</sup>

Water Self Sufficiency Index : 0.2

Water Consumption/m<sup>2</sup> : 0.21

Water Consumption/Work station : 3.74

The drinking water consumption was limited by the choice of hydro-efficient equipment: flush: 3 / 6L Urinal: 1L / hunting tap: 3L / min. Watering green spaces in the ground floor is made from non-potable water aquifer. Water consumption of green space represents 14.3% of the rainwater seeped into the groundwater due to an infiltration carpet.

### Indoor Air quality

Air-handling filters are M5 and F9 type, which ensures a fine particle filtration (Int1 - High indoor air quality). In addition, the lining is a minimum of Class A for emissions of VOCs and formaldehyde. The wood used is treated with CTB P + products.

### Comfort

**Health & comfort :** Comfort: Chilled beams help to ensure a residual air speed below 0.15m / s (summer and winter) and heat treating office space. Remote controls are available on each tray to allow occupants to manage the set temperature, lighting (dimming) and blinds. Blinds are installed in the South, East and West and are managed by a weather station (depending on solar gains). This ensures good thermal comfort and avoid glare. Visual comfort is ensured through uniformity >0,7 et un UGR<19. The choice of interior finishes turned to light colors and glazing unit is large enough to ensure good natural light in offices. Acoustic comfort is provided by class B and carpets powerful walls. All the technical premises are located in basements, which limits the risk of noise nuisance. Health: All linings are at least Class A and treatment of the wooden structure is certified CTB + P. The integration of allergen species was limited on the landscape project which allows to create pleasant outdoor areas for sensitive groups. The ventilation rate in the offices of 45m<sup>3</sup> / h / beam which ensures excellent air exchange and the filters are of type F5 + F9 (fine filtration ensuring good air quality). The filters were changed before delivery.

## Carbon

### Life Cycle Analysis

Eco-design material : wood frame

## CONTEST

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

The contracting authority requested to construct a project according to technical and regulatory requirements of 2050. This is therefore in our view, a practical and reproducible example of building that can be implemented to meet current environmental challenges.

The operation aims triple environmental certification:

- HQE - Out-standing
- BREEAM - Very Good
- LEED - Silver

### Building candidate in the category



Energies renouvelables





Smart Buildings



Bâtiment zéro énergie



Santé et confort



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