


## La Grande Halle

by Catherine RANIERI / 2017-05-11 17:31:06 / France / 10180 / FR



Extension + refurbishment

Primary energy need :

# 101

kWhep/m<sup>2</sup>.an

(Calculation method : RT 2012 )

**ENERGY CONSUMPTION**

*Economical building*

< 50	A
51 à 90	B
91 à 150	C
151 à 230	D
231 à 330	E
331 à 450	F
> 450	G

*Energy-intensive building*

Building

A

**Building Type** : Office building < 28m  
**Construction Year** : 1880  
**Delivery year** : 2017  
**Address 1 - street** : 19 rue Pierre Bourdeix 69007 LYON, France  
**Climate zone** : [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area** : 21 000 m<sup>2</sup>  
**Construction/refurbishment cost** : 30 000 000 €  
**Number of Work station** : 1 580 Work station  
**Cost/m<sup>2</sup>** : 1428.57 €/m<sup>2</sup>

**Certifications :**



### General information

The program of "La Grande Halle" concerns the development of 20,000 m<sup>2</sup> of offices divided into 3 buildings in the form of a campus. La Grande Halle is part of a wider redevelopment project ("depollution") of a 2.7 ha industrial "brownfield" ("Gerland 75") developing 50,000 m<sup>2</sup> of housing, offices and businesses involved in the revitalization of the district Gerland in Lyon which will be delivered in 2020.

Designed by Reichen and Robert Associates, "La Grande Halle" integrates the restructuring of an existing hall. The building offers a range of services for employees, all resolutely oriented towards urban biodiversity with 900m<sup>2</sup> of landscaped gardens. This strategic axis of Gecina's patrimonial policy is the main focus of this program.

A versatile restaurant overlooking a private garden  
 Interior gardens and walkways planted, access roads between the various buildings, bringing to the upper floors a verdant panorama

Accessible terraces  
Meeting rooms open to the interior gardens or terraces  
Photo credit: Philippe Roguet

## Sustainable development approach of the project owner

Winner of a competition organized by EDF to relocate the management of SEPTEN of EDF, we worked to make this building as durable as possible with materials such as wood and stone. The objectives: to obtain the HQE certification Excellent level and the certification BREEAM Very Good. This is not our first green building. The strong ambitions expressed in design allowed us to obtain in phase the realization of 2 new labels: Low Carbon Building and Biodiversity. La Grande Halle project is part of the dynamic reconstruction of the city on the city. The articulation between the preserved Halle (wall, piercings, and volume of the roof) and the new buildings allows the neighborhood to evolve in accordance with the existing fabric. The volumetry in R + 5, the composition in small assembled volumes, the work of inclination of the roofs make this project an urban building integrated.

## Architectural description

The wood (70% of the wooden facades, 1700 m<sup>2</sup> of wooden floor in the renovated hall, timber frame in the hall, insulation of wooden wool blankets, larch-stone terraces), stone (golden stone walls of The preserved hall, natural stone paving in the gardens). Creation of more than 900 m<sup>2</sup> of gardens. Use of geothermal energy for the heating and cooling of the building. The project is a homogeneous and introverted whole. Patio buildings organize a succession of interior / exterior spaces that enrich the lives of users. In this way, it allows the concentration and the serenity of the future occupants.

## Building users opinion

No feedback for the moment, the building will be occupied in November 2017

## If you had to do it again?

Everything except geothermal energy (very complicated administrative authorization and very long, complex studies).

## Stakeholders

### Stakeholders

Function : Designer  
Reichen et Robert / D3 Architectes  
Marc Warnery / Jacques Gelez  
<http://www.d3architectes.fr>

Function : Contractor  
Gecina

### Contracting method

Other methods

## Energy

### Energy consumption

Primary energy need : 101,00 kWh<sub>ep</sub>/m<sup>2</sup>.an

Primary energy need for standard building : 206,00 kWh<sub>ep</sub>/m<sup>2</sup>.an

Calculation method : RT 2012

Breakdown for energy consumption : Heating: 4,25 kWh<sub>ep</sub> / m<sup>2</sup> / an Cooling: 4,65 kWh<sub>ep</sub> / m<sup>2</sup> / year Ventilation: 8,20 kWh<sub>ep</sub> / m<sup>2</sup> / year Lighting: 6.49 kWh<sub>ep</sub> / m<sup>2</sup> / year Auxiliaries: 2.08 kWh<sub>ep</sub> / m<sup>2</sup> / year DHW: 1.81 kWh<sub>ep</sub> / m<sup>2</sup> / year

Initial consumption : 101,00 kWh<sub>ep</sub>/m<sup>2</sup>.an

### Real final energy consumption

Final Energy : 55,00 kWh<sub>ep</sub>/m<sup>2</sup>.an

### Envelope performance

Envelope U-Value : 0,45 W.m<sup>-2</sup>.K<sup>-1</sup>

More information :

Ubat of the hall: 0,450 W / m<sup>2</sup>.K

Bbio North Building: 64,20

Bbio South Building: 65.80

Indicator : I4

Air Tightness Value : 2,03

## More information

Estimated actual consumption in design at 234 kWh<sub>ep</sub> / m<sup>2</sup> / year (including office automation, restaurant, off-RT). The initial consumption can not be given because the building did not have the same use before renovation.

## Renewables & systems

### Systems

Heating system :

- Heat pump

Hot water system :

- Individual electric boiler
- Solar Thermal

Cooling system :

- Geothermal heat pump

Ventilation system :

- Double flow heat exchanger

Renewable systems :

- Solar photovoltaic
- Heat pump (geothermal)

Renewable energy production : 50,00 %

### Smart Building

BMS :

Given the specificity of the site, the safety network is separated from the GTB network. The GTB is responsible for monitoring and operating the building. As part of the large-scale operation, access was put on energy performance monitoring

Users' opinion on the Smart Building functions : Training of the operator of the GTB on 2 sessions of 2 days. Delivery of a multifunction remote control operating card by office

## Environment

### Urban environment

Land plot area : 8 319,00 m<sup>2</sup>

Built-up area : 96,00 %

Green space : 900,00

Metro station Place Jean Jaurès at 3mn, shops rue de Gerland at 100m, green spaces on rue de la Croix Barret

## Products

### Product

Thermofrigopompe

Carrier

<http://www.carrier.fr/carrier/contact/remarques>

<http://www.carrier.fr/>

Product category : Table 'c21\_china.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 = '18'

System for the production of hot water and chilled water simultaneously with exchange on geothermal water loop



## Costs

### Construction and exploitation costs

Renewable energy systems cost : 706 000,00 €

## Health and comfort

### Water management

Consumption from water network : 5 962,00 m<sup>3</sup>

Consumption of harvested rainwater : 1 251,00 m<sup>3</sup>

Water Self Sufficiency Index : 0.17

Water Consumption/m<sup>2</sup> : 0.28

Water Consumption/Work station : 3.77

Hypotheses taken into account:

- Number of employees: 1580 people + 10% visitors
- Attendance rate: 0.7
- WC: 2L / 4,5L
- Watering needs: 301 m<sup>3</sup> / year
- Restaurant requirements: 6.3 m<sup>3</sup> / day
- Sinks: 8 L / min
- Washbasins: 2.5 L / min
- Showers: 5 L / min

Re-use of rain-water on 2050 m<sup>2</sup> of roofing, making it possible to recover 940 m<sup>3</sup> / year

### Indoor Air quality

IAQ measures have not yet been implemented. Nevertheless, the objectives are: - Nitrogen dioxide (NO<sub>2</sub>) <40 µg / m<sup>3</sup> - Benzene <2 µg / m<sup>3</sup> - Formaldehyde <10 µg / m<sup>3</sup> - COVT <300 µg / m<sup>3</sup> - PM 10: <20 µg / m<sup>3</sup> - PM 2.5: <10 µg / m<sup>3</sup>

## Carbon

### GHG emissions

GHG in use : 94,00 KgCO<sub>2</sub>/m<sup>2</sup>/an

Methodology used :

BBCA method, based on RT consumption

GHG before use : 566,00 KgCO<sub>2</sub> /m<sup>2</sup>

Building lifetime : 50,00 année(s)

, ie xx in use years : 6.02

GHG Cradle to Grave : 670,00 KgCO<sub>2</sub> /m<sup>2</sup>

BBCA method, used in the search for the BBCA label

### Life Cycle Analysis

Material impact on GHG emissions :

12.4

Material impact on energy consumption : 49,30 kWhEP

Eco-design material : The facades are made of framework and wood panels, part of the roofs is insulated by insulation glass wool. The hall has wooden floors and timber framing.

## Contest

### Building candidate in the category



**Bas Carbone**



**Coup de Cœur des Internautes**



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