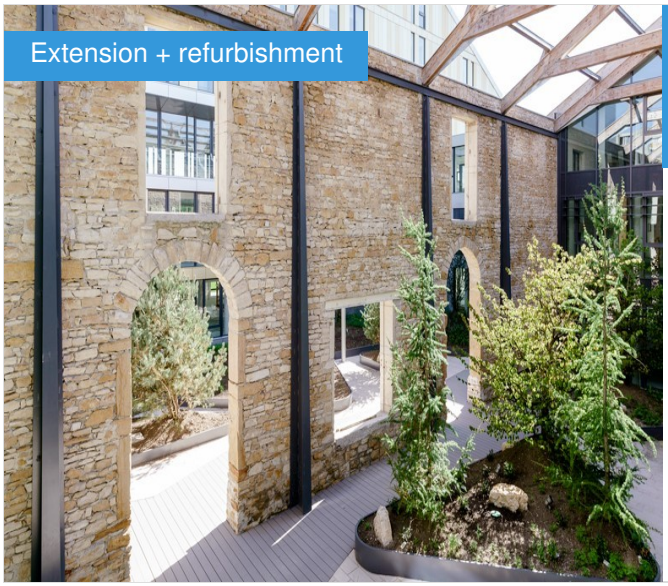
La Grande Halle

by Catherine RANIERI / 2017-05-11 17:31:06 / France / 9869 / FR



Primary energy need :

101 kWhep/m².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 m²
Construction/refurbishment cost : 30 000 000 €
Cost/m2 : 1428.57 €/m²

Certifications :

General information

The program of "La Grande Halle" concerns the development of 20,000 m² 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 m² 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 900m² 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 Biodivercity. 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 m2 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 m2 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 kWhep/m^2.an

Primary energy need for standard building : 206,00 kWhep/m^2.an

Calculation method : RT 2012

Breakdown for energy consumption : Heating: 4,25 kWhef / m² / an Cooling: 4,65 kWhef / m² / year Ventilation: 8,20 kWhef / m² / year Lighting: 6.49 kWhef / m² / year Auxiliaries: 2.08 kWhef / m² / year DHW: 1.81 kWhef / m² / year

Initial consumption : 101,00 kWhep/m^2.an

Real final energy consumption

Final Energy : 55,00 kWhef/m^2.an

Envelope performance

Envelope U-Value : 0,45 $W.m^{-2}.K^{-1}$

More information :
Ubat of the hall: 0,450 W / m².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 kWhep / m² / 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^2

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 : HVAC, électricité / heating, hot water

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^3

Consumption of harvested rainwater : 1 251,00 m^3

Water Self Sufficiency Index : 0.17
Water Consumption/m2 : 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 m3 / year
- Restaurant requirements: 6.3 m3 / day
- Sinks: 8 L / min
- Washbasins: 2.5 L / min
- Showers: 5 L / min

Re-use of rain-water on 2050 m² of roofing, making it possible to recover 940 m3 / year

Indoor Air quality

IAQ measures have not yet been implemented. Nevertheless, the objectives are: - Nitrogen dioxide (NO2) <40 µg / m3 - Benzene <2 µg / m3 - Formaldehyde <10 µg / m3 - COVT <300 µg / m3 - PM 10: <20 µg / m3 - PM 2.5: <10 µg / m3

Carbon

GHG emissions

GHG in use : 94,00 $KgCO_2/m^2/an$

Methodology used :
BBCA method, based on RT consumption

GHG before use : 566,00 $KgCO_2$ $/m^2$

Building lifetime : 50,00 année(s)

, ie xx in use years : 6.02

GHG Cradle to Grave : 670,00 $KgCO_2$ $/m^2$

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

Reasons for participating in the competition(s)

- 4 labels : HQE niveau Excellent - BBCA - Biodivercity - BREEAM Very good
- Climatisation assurée par géothermie - 80 m2 de panneaux solaire (eau chaude restaurant)
- 1700 m2 de plancher bois dans la halle
- 900m² de jardins paysagés
- Tous les éclairages en leds
- 70% des façades à ossature bois

Cet ensemble atteint un niveau RT 2012 - 25 % par la mise en place d'un bâti performant et un mix énergétique en grande partie alimenté par des énergies renouvelables.

Sur ce programme, l'accent est mis, en particulier, sur :

- la limitation du recours aux matières premières non renouvelables,
- une réflexion très poussée sur la biodiversité,
- la gestion économe de l'eau.

Solutions environnementales retenues :

- La mise en place d'un **système de géothermie**
- la mise en œuvre d'une importante quantité de bois sur le projet (87 dm3/m²SDP), avec une **ossature bois pour la halle**, .
- une **forte végétalisation du site**
- la **rétention des eaux pluviales** pour l'arrosage et la mise en place d'appareils hydro-économes.
- la création d'un **bassin d'infiltration des eaux de pluie** qui garantit aucun rejet au réseau public.

Building candidate in the category

Bas Carbone

Coup de Cœur des Internautes

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