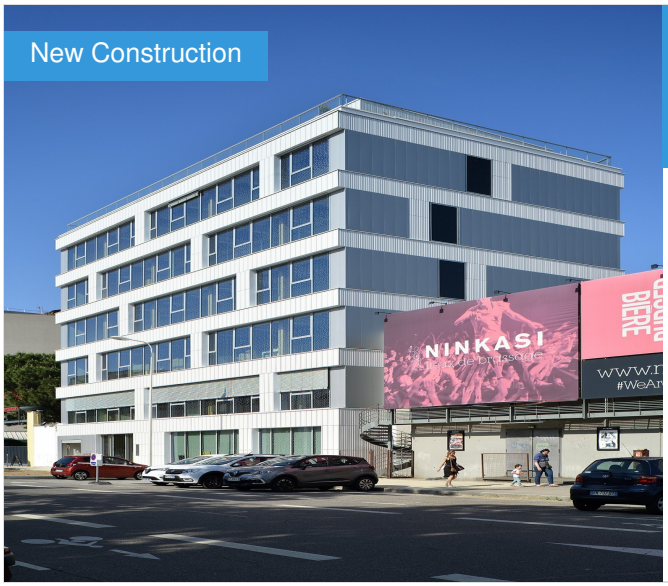
Pluriel - 1st wooden tertiary building in Lyon

by Anne-Lise AVERSENG / 2023-03-07 00:00:00 / France / 1823 / FR

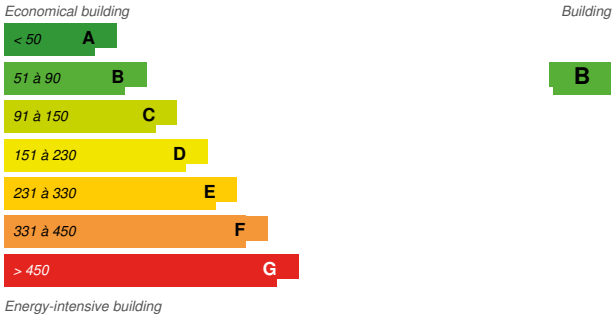


Primary energy need :

72.2 kWhep/m².an

(Calculation method : RT 2012)

ENERGY CONSUMPTION



Building Type : Office building < 28m
Construction Year : 2020
Delivery year : 2022
Address 1 - street : 261 rue Marcel Mérieux 69007 LYON, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 2 331 m²
Construction/refurbishment cost : 4 559 890 €
Number of Work station : 202 Work station
Cost/m2 : 1956.19 €/m²

Certifications :

General information

Sustainable and efficient manufacturing while thinking about new professional uses: with the PLURIEL operation, QUARTUS has built **the first office building in Lyon in Gerland designed entirely in a wooden structure**, certified E2C1 and BBCA excellent.

This building, made up of 6 levels and 2,203 m² of floor area, was initially designed with a concrete structure. QUARTUS, due to its raison d'être, has changed the specifications towards a wooden structure and low-carbon materials selected by the architect Régis Gachon and the EODD design office.

Pluriel was delivered to SCI Unofimmo in February 2022.

Actively participate in the ecological transition

The building was designed with a very strong environmental quality approach in order to make the building more ecological, sustainable and comfortable for

users, while refining the aesthetics of the facades. Thus the building fits perfectly into its urban environment and stands out on the scale of the district as a building for tertiary use.

The building is **certified BBCA excellent, E2C1 and is aiming for Breeam certification (very good level)**. It shows an **RT2012 -39% level**.

This double certification is equivalent to a level of **performance improved by 10% compared to RT 2012** and attests to the exemplary nature of this building in terms of carbon footprint.

The BBCA label quantifies and values, thanks to an independent certified measurement, the reduction of the carbon footprint of the building over its entire life cycle (construction, operation, end of life, carbon storage), achieved thanks to the implementation of virtuous low-carbon practices.

The concrete infrastructure has been kept to a minimum and develops 14 parking spaces.

The envelope and equipment have good energy performance: efficient insulation, airtight building, efficient heating, double-flow ventilation, efficient LED lighting, etc.

Solar protection optimized according to the facade (BSO or fabric blind) limits summer overheating.

Abundant and high-quality natural lighting, as well as access to exterior views, improve the visual comfort of users.

Water consumption is controlled by the installation of economical sanitary equipment.

The health quality of indoor air is particularly improved by limiting VOC and formaldehyde emissions, by the choice of construction materials used and by the installation of an efficient ventilation system.

Building users opinion

According to the surveys we conducted with occupants following their installation, it appears that they are particularly sensitive to the qualities of atmosphere, warmth and color that wood brings to workspaces.

The occupants also appreciate the attic top floor which has an open-air terrace, on which everyone can meet, discuss or simply relax.

Finally, the fully vegetated terrace on the ground floor, the shared kitchen and the play area are also among the key elements cited in the survey.

If you had to do it again?

The gabled facades had to be made blind (without direct views) due to the presence of lower adjoining buildings. The architect introduced a fixed opalescent bay window at each level on each gable in order to make the gable more luminous within the office plateau and to slender the gable facades from the outside. Today, in operation, we realize that these frames (non-opening) are difficult to access for cleaning.

The covered premises for parking bicycles were partitioned off from the car park by a single-leaf swing door. At the start of the construction site, on a suggestion from our investor, we installed an automatic swing door to make access to the bike room more fluid for the cyclist and his bike.

See more details about this project

https://video.enerj-meeting.com/title/immeuble-bureaux-pluriel-e2c1/
https://www.groupe-quartus.com/stories/a-lyon-quartus-releve-le-defi-de-la-construction-bas-carbone/
https://nouveaulyon.fr/2022/06/30/lyon-touche-du-bois/
https://www.batimentbascarbone.org/pluriel-quartus-merieux-conception/

Photo credit

Studio Erick Saillet

Stakeholders

Contractor

Name : QUARTUS
Contact : Géraldine AJAX
https://www.groupe-quartus.com/

Construction Manager

Name : ATELIER REGIS GACHON ARCHITECTE
Contact : Régis GACHON - contact[a]ateliergachon.com - 04 26 46 21 80
https://www.ateliergachon.com/

Stakeholders

Function : Construction Manager

AQTIS

Philippe BOISAN et Nicolas PIROT - contact[a]aqt.is

https://www.aqt.is/
Project Manager, construction economy, OPC

Function : Other consultancy agency

PURE INGENIERIE

Damien ROLLAND et Christian FAGES - 04 78 64 93 73

https://www.linkedin.com/company/pure-ingenierie/about/
Structures, fluids and thermal design office

Function : Structures calculist

EXACT ACOUSTIQUE

Laurent FAIGET - contact[a]exact-acoustique.com - 04 74 65 62 81

https://www.linkedin.com/company/sas-exact-acoustique/about/

Function : Assistance to the Contracting Authority

EODD

Guillaume PARIZOT et Romain CARRON - contact[a]eodd.fr

https://www.eodd.fr/
Environmental AMO and environmental studies

Function : Company

CLIMATAIR

Soufiane SELMI - climatair.rhone[a]ventimeca.com

https://www.climatair.fr/
HVAC, sanitary plumbing, BMS lots

Function : Company

BROCHIER

Jean Marc BROCHIER - 04 87 62 50 98

Electricity package, CFO, CFA

Function : Company

SOTERLY

F. BAUDRAND - soterly[a]soterly.com

Earthwork lot

Function : Company

ELTS

https://www.eltsfondation.com/
Retaining lot - deep foundations

Function : Company

VALENTIN

Laurent SERRANO, secretariat[a]valentin-sa.com

https://www.entreprisevalentin.fr/
Structural work and insulation packages

Function : Company

FAVRAT CONSTRUCTION

Pascal FAVRAT - info[a]favrat.fr

https://www.favrat-ossature-bois.fr/
Wood frame lot

Function : Company

SOPREMA

https://www.soprema.fr/fr/
Sealing

Function : Company

SOMIROC

Cyrille MINODIER

https://bsrv-groupe.fr/revetement-facade-sol/entreprise/
Cladding lot

Function : Company

AMALGAME

Raphaël DEVILLIERS - 04 37 22 13 13

Lots of exterior carpentry, aluminum and occultations

Function : Company

ASCR CELLUPICA

Eric CELLUPICA

https://www.ascrcellupica.fr/
Locksmith-metalwork

Function : Company

SCHINDLER

https://www.schindler.fr/fr.html
Elevator lot

Function : Other consultancy agency

Builders&Partners

Yann BRUNEL

https://www.b-p.fr/
Facade design office

Function : Company

NORBA RHONE ALPES

Mme BACCICHETTI - 04 72 68 68 00

https://www.norba-menuiserie.com/agence/rhone-alpes/
Interior carpentry lot

Function : Company

MT CORPORATION

Batch of reusable false floors

Function : Company

AUBONNET

Yvan AUBONNET

Lots of partition linings, false ceilings, paintings, wall coverings and flexible floors

---

Function : Assistance to the Contracting Authority

SAS ECOH

Hervé COSTEL

https://www.linkedin.com/in/hervecostel/?originalSubdomain=fr

Contracting method

Separate batches

Type of market

Global performance contract

Allocation of works contracts

Separate batches

Energy

Energy consumption

Primary energy need : 72,20 kWhep/m^2.an

Calculation method : RT 2012

Breakdown for energy consumption :

- Heating: 20.80 kWhep/m²
- Cooling: 21.20 kWhep/m²
- DHW: 6.30 kWhep/m²
- Lighting: 7.90 kWhep/m²
- Auxiliaries: 16.10 kWhep/m²

Envelope performance

Envelope U-Value : 0,71 $W.m^{-2}.K^{-1}$

More information :
Insulation under the high floor under the ground of 160 mm R=4.5 m2.K/W
Façade insulation from the outside, thickness 210 mm, R=5.562 m2.K/W
Insulation of gable facades from the outside, thickness 110mm, R = 3.437 m2.K/W

Roof insulation:
- Accessible terrace (roof top) thickness 120 mm R= 5.45 m2.K/W
- Inaccessible vegetated terrace, thickness 200 mm, R= 8.7 m2.K/W

All the bay windows in the project have aluminum joinery (Uf = 4 W/(m².K).
The current glazing is screen-printed double glazing (screen printing rate < 40%). The characteristics of this glazing are as follows:
- Ug = 1.0W/(m².K)
- TLg = 0.55
- Sg = 0.30

The south facade of the attic has glazing with the following characteristics:
- Ug = 1.0W/(m².K)
- TLg = 0.65
- Sg = 0.36

The exterior woodwork on the west facade is equipped with dark-coloured exterior fabric blinds with the following spectrophotometric characteristics:
- Solar transmittance < 0.15
- Light transmission < 0.10

The exterior joinery of the West facades and the South facade of the attic are equipped with an external rolling venetian blind system, controlled according to the sunshine on the bays, with a solar radiation set point of 350 W/m², beyond which they close. In order to secure energy and comfort gains, it was decided to motorize these rollings and automate their management .

An infiltration rate of 0.8 m3/(h.m2) under 4Pa was considered in all the thermal zones.

Building Compactness Coefficient : 0,35

Indicator : I4

Air Tightness Value : 0,74

Users' control system opinion :

According to the surveys that we conducted with the occupants following their installation, it appears that they appreciate the dimmable and presence detection lighting in the offices, thus allowing optimum lighting at the workstation.

Concerning the occultations by the outside (external rolling venetian blind system), the automation by remote control allowing a user derogation pleases them. They only regret that the concealments are not individualized to the 1.35m office frame, which would have allowed a multitude of possible layouts (offices, open spaces, meeting rooms).

More information

Commissioning after 1 year has not yet been carried out.

Renewables & systems

Systems

Heating system :
- Others
- Fan coil

Hot water system :
- Individual electric boiler

Cooling system :
- Others
- Fan coil

Ventilation system :
- Double flow heat exchanger

Renewable systems :
- No renewable energy systems

Other information on HVAC :
Production of heat and cold: production is ensured by the heat-refrigeration pumps (3 VRV 3-pipe type units). It is an efficient heating and air conditioning system with low greenhouse gas emissions since it is powered by electricity.

Transmitters: heat and cold are diffused by fan coils located in the ceiling.

Mechanical ventilation: the renewal of hygienic air in the rooms is ensured by double flow ventilation (a CTA by levels located in the false ceiling of the sanitary facilities). The fresh air is diffused by the supply vents and taken up by other dedicated vents.

Environment

Biodiversity approach

Mitigation actions on soil and biodiversity :
A diagnosis was carried out by an ecologist prior to the start of the works. Given the presence of a building on the entire plot, and this in an urban and artificialized context, it was concluded that the site did not include elements favorable to fauna and flora.

A process aimed at improving the attractiveness of the site for the surrounding biodiversity was then carried out, according to the ecologist's recommendations.

The actions carried out are:

- Installation of an extensive green roof with plant palette.
- Installation of refuges for small fauna (insect hotel, birdhouses and bat houses).
- Vegetation of a courtyard in the ground ensuring 84% of native and non-allergenic plant species and 3 different planting strata (tree, shrub and herbaceous). Plant species are favorable to fauna (berry and/or melliferous species): 45% individual trees and shrubs, 41% of the herbaceous layer contains melliferous species.
- Do not create deadly traps.
- Limit light pollution.

Urban environment

A location in the 2nd business district of the Lyon metropolis after Part-Dieu, the Gerland district in the 7th arrondissement. A changing neighborhood.

A location favoring collective transport modes:

1. Immediate proximity to metro line B linking the Part-Dieu station;
2. Proximity to line n° 1 of the tram, main line of the agglomeration.

But also a proximity to major highways (North/South East/West).

A tertiary sector rich in shops, bars and restaurants

Land plot area : 472,00 m^2

Built-up area : 89,00 %

Green space : 53,00

Products

Product

CLT superstructure (columns, beams, floors and walls)

KLH

https://www.klh.at/

Product category : Structural work / Carpentry, cover, titghtness

The volume of wood used for this construction is significant (nearly 30 m3) and constitutes a real carbon sink for the environmental performance of the building.

Plancher MOBIUS

MOBIUS REEMPLOI

contact[a]mobius-reemploi.fr

https://www.mobius-reemploi.fr/

Product category : Finishing work / flooring

The false floor comes from a resource reconditioned by MOBIUS.

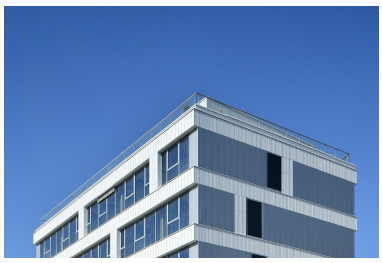
BSO differentiated solar protections / blinds

GRIESSER

http://www.griessergroup.com

Product category : Finishing work / Exterior joinery - Doors and Windows

The reflection on the types of concealment between external rolling venetian blind and external blinds has also been pushed to the carbon weight level. This is why the use of external rolling venetian blind was proposed on the west facade, and exterior blinds on the east facade.



Costs

Construction and exploitation costs

Cost of studies : 692 220 €

Total cost of the building : 5 391 820 €

Additional information on costs :
Cost of study fees: €692,220 excluding tax
Cost of VRDs and connections: €97,580 excluding tax
Construction cost (cis demolition, depollution of existing buildings and excavated land): €4,602,020 excluding VAT

Circular Economy

Circular economy strategy

Phase in which reuse has been integrated : Programming

Type of circular economy strategy implemented :

- Choice of non visible products
- Maximization of the carbon gain

Quantified targets for reuse? :

Non

Integration of reuse into the written contract documents : Integration of the reuse specifically in the special technical specifications of the concerned batches

Validation protocol for reused materials : Yes

Validation protocol for reused materials :

By technical sheet, test report and visas of the Project Management and the control office.

Deposit validation form : No

Reuse : same function or different function

Batches concerned by reuse :

- Raised floors

For each batch : Reused Materials / Products / Equipments :

The reuse on this project consists of the false floor lot:

- Product: Dall'R30B type false floor slabs from Etablissements MOBIUS, made up of high-density chipboard panels, 30 mm thick and a folded treated steel sheet tray, 0.5 mm thick, on the underside and rising on the peripheral sides
- Quantity: 1,742 m2. The unit of measurement is an area in m2
- Traceability of the supplier MOBIUS tells us that it comes from 2 sites:

1. 110 avenue Edouard Vaillant - 94 800 VILLEJUIF
2. 21-25 avenue Matignon - 75008 PARIS

- Reconditioning of the tiles by the supplier and reuse

Reused materials rate :

The reuse process carried out on this operation is in fact part of several other actions carried out in parallel or a posteriori on a national scale at QUARTUS.

The QUARTUS Group adheres to the reuse booster

"The real estate sector is often decried for the importance of its consumption of resources, underlines Emmanuel LAUNIAU, President of QUARTUS, but very few actors had until now made the effort to imagine a pragmatic way of encourage the sector to reuse more materials. Transforming, reusing, reusing what is already there is for QUARTUS a major lever to make a city more sober, ecological and accessible to all.»

This membership is a natural continuation of the commitments presented in June by the QUARTUS Group, including that of promoting the deployment of "solutions to anticipate climate change". From 2023, any new operation of the QUARTUS Group will thus integrate biosourced, geosourced or reused materials, and will be developed with increased consideration of the issues of reversibility and scalability of buildings.

Îlot Bergeron, Pavillon Raspail: two examples of concrete actions

By carrying out the rehabilitation of the Halle Bergeron on the Ile de Nantes, former Alstom site, in a mixed program combining 7,800 m2 of offices and residence of 24 apartments, QUARTUS has chosen to keep the dry dock (25m x 10m x 7m) to manage rainwater, store roof water and create an ornamental pond. The structure of the halls - 105 tonnes of steel - was also dismantled and repaired to build a workshop less than 80 km away. The Group has also carried out a waste diagnosis of 45 materials sheets which have enabled various local players committed to reuse to satisfy their research.

As part of the joint development zone Saint-Vincent-de-Paul reconversion project (Paris 14th), QUARTUS is transforming the Lelong building into a program of 137 housing units and more than 2,600 m2 of business premises, 100% of the surface area of floor and 83% by mass of the structure will be retained. Thanks to a resource diagnosis, 23 materials with potential for reuse (approximately 200m3 and 80 tons) were identified. Projection blinds will, for example, be refurbished and then reused in their initial use, while other materials will be reused on site for a new use, in particular in the form of furniture. Added to this are materials from outside reuse channels, for a recovery-reuse objective of 11 tonnes of materials. The Reuse Booster provides construction players with technical resources to better integrate reuse into their production processes, while centralizing their requests for reused materials via a marketplace putting them in contact with specialized suppliers.

Logistics

Rehabilitation and reconditioning operations (if project concerned by a cleaning/demolition stage) : No

Storage of materials from external supply :

- No storage on site, but financial contribution for storage by the material supplier on his site

Insurance

Consultation of the technical controller : No

Specific mission given to the technical controller :

No - reuse limited to the reconditioned false floor from a supplier providing a guarantee on its production of reconditioned elements.

Insurance broker on the project : Yes

Insurance broker : ASCCO

Consultation of the broker : No

Insurer : AVIVA ASSURANCES

Consultation insurer : No

Environmental assessment

Impacts avoided : water, waste, CO2 :

Raised floors category

Quantities 1742 m2

Impacts according to the calculation tool developed by the Booster du Réemploi:

- 113 tonnes of CO2 avoided
- 1,360 kg of water consumed avoided
- 77 tonnes of waste avoided

Economic assessment

Total cost of reuse : 25 000 €

Reuse quantified in the companies' offers? : Yes

Purchasing process for reused materials :

- Purchase by the company from a reuse platform

Communication

Communication on the process : Yes

If so, please specify :

Project presentation during ENERJmeeting 2021 - feedback from a PLURIEL "E2 C1 Ready 2050" office building in Lyon with an advanced circular economy approach. BREEAM and BBCA certifications.

https://video.enerj-meeting.com/title/immovable-offices-plural-e2c1/

Project visit : Yes

Circular design

Sustainable supply :

- Selective demolition of the existing building (aimed at recycling 3 types identified in the waste diagnosis);
- Concrete infrastructure limited to the minimum (a single level of infrastructure made of concrete);
- Superstructure made of wooden frame (posts, beams, floors and walls in CLT).

Upstream reflections in order to reduce the environmental of the facade, having resulted in:

1. To replace aluminum BSOs with exterior screen blinds on the east facade of the project;
2. To select facade materials that reduce the environmental weight of the facade while maintaining the exterior appearance expected of a commercial building adapted to its urban environment. The fibre-reinforced concrete cladding initially planned for the east and west facades was replaced by Alphaton enamelled terracotta cladding from Moeding and the opaque glass curtain wall with aluminum profile in the gables was replaced by ST900 steel cladding from Arval;
3. Selecting materials from re-use (reconditioned Mobius false floor) and a carpet made mostly of recycled materials (Milliken).

Health and comfort

Indoor Air quality

The theme of indoor air quality is dealt with in the BREEAM certification via the HEA02 criterion. The actions of the air quality plan carried out are as follows:

- Distance from fresh air intakes and discharge of 8 meters;
- Control of the TVOC of construction products (class A+ in the majority, class A minimum required);
- Adapted ventilation system: CTA filtration, M5 (returned air) + F9 (fresh air);
- Regulation, sealing and maintenance of the aeraulic network: class B for aeraulic networks;
- Recommendations on indoor air quality included in the lessee's specifications.

Comfort

Temperature level :

Heating and cooling are set as set points at:

- Heating: 19°C, basic outdoor winter conditions in Lyon (69), i.e. -10°C;
- Cooling: reduction of 6°C compared to nominal summer conditions, i.e. 26°C inside for 32°C outside with drift beyond this temperature.

The heat treatment of all the premises is carried out using direct expansion production of the 3-pipe DRV type, allowing the offices to be heated and cooled simultaneously.

When unoccupied, it is maintained at 16°C. Temperatures in the offices are relaunched 2 hours before occupancy on weekdays (6 a.m.) and 4 hours before Monday mornings (4 a.m.), from 6 a.m. to warm up the building as soon as the occupants arrive .
The cooling setpoint temperature is maintained at 32°C when the premises are unoccupied.

Remote controls (+3/-3°C), distributed by level (2 per level with zoning per facade), allow occupants to modulate the setpoint.

Acoustic comfort :

An approach was implemented upstream of the project by the acoustic thermal consultancy agency defining ambitious objectives:

- Isolation from outside noise (after measuring environmental noise);
- Isolation from interior noise;
- Limitation of impact noise from one level to another;
- Limitation of equipment noise perceived in office spaces;
- Limiting the acoustic reverberation of noise in open office spaces;

based on the performance level of the NFS31080 standard relating to the acoustics of offices and associated spaces and the overall insulation objectives prescribed by the BREEAM standard.

The architectural bias of making the wooden structure fully visible inside the premises, led to the implementation of acoustic islands suspended under wooden slabs and absorbent textile wall panels in the office floors - a solution which is particularly comfortable for use according to the occupants.

Visual comfort :

All of the floors were simulated according to a probable positioning of the offices (traffic areas excluded).

In order to verify that the requirements of the BREEAM standard in terms of natural lighting have been met, a compliance report for the eligible premises has been carried out.
This report details by level and by room the achievement of the requirement in FLJ min and in FLJ average.

The calculation of the ratio of premises complying with the requirement, by level and for the building as a whole, shows that the HEA01 credit has been achieved.

Indeed, even if the building is relatively deep (14m), the rate of glazed surface is very important and the joinery is very high (2.5m on the floors, 2.9m on the ground floor and 3m on the attic) which allows the all of the office floors to enjoy a good lighting atmosphere.

Thus, **85% of the surfaces of premises with prolonged occupation have a minimum FLJ greater than 0.54% and an average FLJ greater than 1.8%.**

Ergonomic design :

Concerning the design and ergonomics of the spaces, significant work has been done with regard to the false ceilings. The objective: to get away from the classic plan of the false ceiling of offices which covers the floor and to leave the floor "free" ennobled of the workspace.

Quality of life and services

Wood being 12 times more insulating than concrete, the living environment suffers. The environmental qualities of wood go so far as to affect the health of the occupants, since wood promotes better indoor air quality thanks to its hygrothermal buffer properties. This material also provides significant acoustic insulation promoting the comfort of the occupants.

Carbon

General infos

- Level reached: BBCA Excellent

Carbon sink

Wooden superstructure (posts, beams, floors and facade in CLT)

-265 kg CO2eq/m² SDP

Initiatives promoting low-carbon mobility

- A few bike spaces on the ground floor on the inner courtyard side;
- Bike room in the basement with automatic open door to facilitate maneuvers with your bike;
- Few car spaces (14 spaces), encouraging travel by public transport, on foot or by bicycle.

GHG emissions

GHG in use : 5,78 $KgCO_2/m^2/an$

GHG before use : 782,00 $KgCO_2 /m^2$

Building lifetime : 50,00 année(s)

, ie xx in use years : 135.29

Life Cycle Analysis

The life cycle analysis takes place in 4 main stages, in accordance with standard NF EN 15978: 2011:

1. Definition of the objectives and scope of the study (functional unit, boundaries, etc.);
2. Life cycle inventory (accounting balance sheet of withdrawals and discharges);
3. Assessment of the impact of the life cycle (transition of flows into impact categories and impact modeling);
4. Interpretation (verification, sensitivity studies, use of results).

The LCA was carried out using Elodie v.3 software developed by the CSTB (Centre Scientifique et Technique du Bâtiment).

The reference study period, corresponding to the planned lifetime of the structure, is **50 years.**

The contributors taken into account are:

- Construction products and equipment (“components”);
- Energy consumption;
- Water consumption and discharge;
- Worksite.

The environmental impacts generated by activity waste produced during the life of the building (excluding deconstruction waste) are not taken into account (excluding the E+C- scope).

Furthermore, the impacts related to the movement of people using the building are not counted here (outside the E+C- scope).

The surfaces taken into account for the BBCA calculation are as follows:

- Existing deconstructed surface: 900 m² sdp according to PC dated April 2019;
- Project area: 2213 m² sdp according to PC dated April 2019.

Contest

Reasons for participating in the competition(s)

Construction en bois, réemploi et matériaux biosourcés
Ce bâtiment tertiaire, de six niveaux, est une construction innovante, **réalisée à 70% en construction bois et en matériaux biosourcés**. Outre les gains sur l’énergie grise de l’ouvrage, ce parti pris structurel assure un stockage carbone biogénique de plus de 500 T de CO2 équivalent. Conscients que tout matériau neuf engendre une consommation d’énergie et de ressources supplémentaires, la volonté de mettre en place une démarche d’économie circulaire sur le projet a également émergé rapidement. Le recours à des dalles de faux planchers issues du réemploi permet notamment d’**économiser 100 tonnes de CO2 équivalent**.

Promoteur, architecte, écologue : tous unis autour du bas carbone
Le processus de conception bas carbone nécessite un travail itératif entre l’architecte et les bureaux d’études pour cerner en amont les postes à prioriser à chaque phase du projet. En particulier, le choix des protections solaires a fait l’objet d’une analyse comparative pour trouver le meilleur compromis entre confort d’été et impact carbone. Le confort et la place du vivant dans l’opération Pluriel ne sont pas oubliés : un plan de qualité de l’air intérieur a été décliné et les aménagements extérieurs ont **pris en compte les préconisations d’un écologue pour favoriser les micro-habitats pour la faune et la flore**.

« En complément de la performance environnementale et énergétique du bois, notre travail architectural a consisté à manifester les qualités d’ambiance, de chaleur et de couleur, que ce matériau apporte à l’espace de bureaux. Il s’agissait donc de sortir du schéma classique du faux plafond de bureaux qui recouvre le plancher et de laisser « libre » le plancher bois qui devient le plafond anobli de l’espace de travail » précise Régis Gachon, architecte de Pluriel.

Trophées Bâtiments Circulaires

Date Export : 20230805165542