The Orangery: a raw earth building within Confluence

by Laurent Sève / 2021-03-25 17:54:08 / France / 11508 / FR

New Construction

Primary energy need:
74 kWhep/m².an
(Calculation method: RT 2012)

ENERGY CONSUMPTION

<table>
<thead>
<tr>
<th>Building Type</th>
<th>Construction Year</th>
<th>Delivery year</th>
<th>Address 1 - street</th>
<th>Climate zone</th>
<th>Net Floor Area</th>
<th>Construction/refurbishment cost</th>
<th>Number of Work station</th>
<th>Cost/m²</th>
<th>Certifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office building &lt; 28m</td>
<td>2018</td>
<td>2020</td>
<td>3 rue Jacqueline et Roland de Pury 69002 LYON, France</td>
<td>[Cfb] Marine Mild Winter, warm summer, no dry season.</td>
<td>1 055 m²</td>
<td>2 243 801 €</td>
<td>84 Work station</td>
<td>2 126.83 €/m²</td>
<td>[NF HQE][breeam][effinergie]</td>
</tr>
</tbody>
</table>

Certifications:

Within the Ydéal Confluence operation, the Orangery is an office building in R+2 built in adobe (raw earth) load-bearing and equipped with a wooden frame. The natural insulating qualities of rammed earth make it an energy efficient building, so it does not need to be air conditioned. The materials (earth and wood) are exclusively from the Rhône-Alpes region. The building is NF HQE, Effinergie+, and BREEAM Excellence certified, and the operation won the silver pyramid regional grand prize and the low carbon vermeil pyramid at the 2019 FPI trophies.

Sustainable development approach of the project owner

Through its projects, both residential and tertiary, OGIC promotes four main axes: a greener city, more resource efficient, more united and more beautiful. This philosophy has resonated with the ambitions of the SPL Lyon-Confluence, and has made it possible to develop in this former industrial area in the heart of Lyon the city of tomorrow, more sustainable and smarter.
Rammed earth is an ancestral method of construction in the Rhône-Alpes region but it had never been used for a building of this height (R+2) with such a structure endowed with large arches. The objective was to build a sober and sustainable building, both through its construction system using local and natural materials (load-bearing rammed earth structure, stone foundations, and wooden frame) and in use, rammed earth being an excellent natural insulator which makes it possible, among other things, to dispense with air conditioning in summer. It is a demonstration building in view of future climate change.

The undeniable success of this project has led OGIC to consider the use of adobe in other projects and to develop innovative and ecological construction methods.

Architectural description

The building in R+2 within a block made up of 3 other buildings in R+7 and one in R+8 makes it possible to open the latter on the street and the district, instead of locking it up. In addition, the choice to equip it with large arches evoking orangeries such as that of the Parc de la Tête d’Or (hence the name “L’Orangery”) makes it naturally luminous and inscribes it in architectural history from Lyon.

The choice of materials was also guided by a real green ambition: the earth (which requires a certain level of clay to be viable) comes from Saint-Quentin-Fallavier, 30 kilometers from Lyon, and the wood from the French Alps.

See more details about this project

https://www.groupe-ogic.fr/realisation/ydeal-confluence-lyon/

Photo credit

Perspectives and plans: Clément Vergély Architects, Asylum
Photos on site: Olympe Nergoux

Stakeholders

Contractor

Name: SAS Lyon 2 Confluence - OGIC
Contact: Magali le Coadic
http://www.ogic.fr

Construction Manager

Name: Clément Vergély Architectes
Contact: Clément Vergély
http://www.vergelyarchitectes.com

Function: Company
Le Pisé
Nicolas Meunier
Construction of the rammed earth structure

Function: Thermal consultancy agency
Etamine
Léa Caudron-Fournier
http://www.etamine.coop
HQE design office

Function: Company
Nugues
Pascal Nugues
Wood frame
Function : Batiserf Ingénierie
Philippe Clément
https://batiserf.com
Structural studies

Function : Company
ABC Borne
Alexis Borne
http://www.abcborne.fr
Sealing of the building

Function : Company
Green Style
https://www.greenstyle.fr
VRD and green spaces

Function : Certification company
Socotec Construction
Christophe Reyre
https://www.socotec.fr
Technical controller

Function : Company
YSO Électrique
Yann Simon
Electricity CFO-CFA

Function : Company
Oriol
Gaëtan Roubin
http://www.oriol.fr/
Plumbing - Heating - VMC - Bathroom furniture

Function : Company
Lofoten Bois
Éric Vialatoux
http://www.lofoten-bois.com/
Exterior wood joinery

Contracting method
Separate batches

Type of market
Global performance contract

Energy consumption
Primary energy need : 74,00 kWh/m².an
Primary energy need for standard building : 150,00 kWh/m².an
Calculation method : RT 2012
Envelope performance

Indicator : EN 13829 - q50 » (en m³/h.m³)
Air Tightness Value : 1.00

Renewables & systems

Systems

Heating system :
- Urban network

Hot water system :
- Urban network

Cooling system :
- No cooling system

Ventilation system :
- Double flow heat exchanger

Renewable systems :
- Solar photovoltaic

Renewable energy production : 34.00%

Other information on HVAC :
- Double flow adiabatic CMV
- Collective self-consumption system with pooled photovoltaic production over the entire island

Environment

Urban environment

Land plot area : 3 995.00 m²
The islet is located next to the regional council of Auvergne Rhône-Alpes and the François Mitterrand esplanade which adjoins it.

Nearby is the "Hôtel de Région - Montrochet" tram station (lines T1 and T2), which quickly connects with the metro network ("Perrache" - line A, or "Debourg" - line B) and the network. SNCF rail at Perrache (main lines) or Jean Macé (TER) stations. The district is also rich in Vélo'v stations, and the river shuttle connects Confluence to Saint-Paul (Vieux Lyon) via Bellecour.

The islet has shops on the ground floor of buildings 2 and 3, and a crèche on the ground floor of building 1. The commercial offer in the surrounding area is dense, especially with the presence of the shopping center Confluence.

The 5 buildings on the block are organized around a central garden courtyard. A few hundred meters away is the Confluence nautical dock. The tip of the Presqu'île, next to the Musée des Confluences, is designed for walking, and on the other side of the Rhône is the Parc des Berges, extended to the south by the Parc Henri Chabert or Parc de Gerland.

Costs

Construction and exploitation costs

Total cost of the building : 2 243 801 €

Energy bill

Forecasted energy bill/year : 5 078.00 €
Real energy cost/m² : 4.81
Real energy cost/Work station : 60.45
GHG emissions

GHG in use: 2,00 KgCO₂/m²/an

Contest

Reasons for participating in the competition(s)

L'Orangery est un bâtiment fondamentalement durable, tant dans son mode constructif (utilisation de matériaux naturels originaires dans la région Rhône-Alpes) que dans son usage : économies d'énergie (chauffage, climatisation, électricité) obtenues grâce aux qualités isolantes du pisé qui ne nécessite pas de climatisation en été et à de grandes ouvertures vitrées, économies d'eau par l'utilisation des eaux de pluie dans les sanitaires, toiture végétalisée contribuant à déméneraliser la ville.

Building candidate in the category