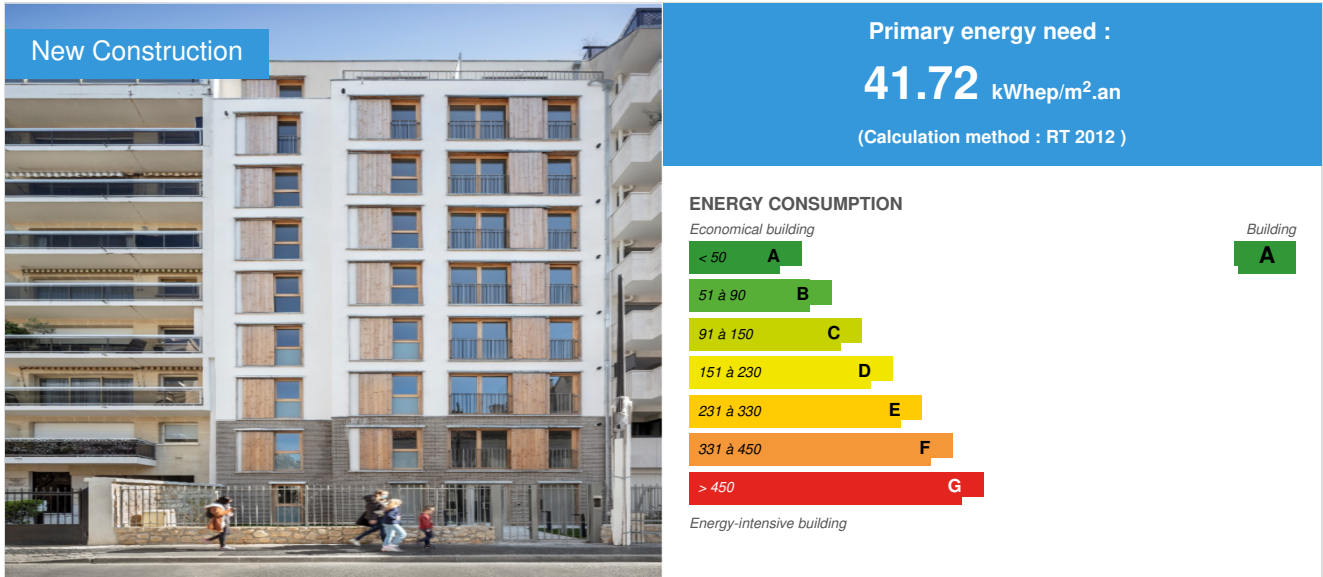


Construction of 15 collective social housing units in hemp concrete

by Christine Désert / 2023-03-21 00:00:00 / France / 1497 / FR



Building Type : Collective housing > 50m
Construction Year : 2021
Delivery year :
Address 1 - street : 81 rue de Bellevue 92100 BOULOGNE-BILLANCOURT, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 790 m²
Construction/refurbishment cost : 1 693 265 €
Number of Dwelling : 15 Dwelling
Cost/m2 : 2143.37 €/m²

Certifications :

HQE
BÂTIMENT
DURABLE
CERTIFIÉ PAR
CERTIVEA

General information

New construction of housing with an innovative material, hemp concrete, which is used here for the first time on a G+8. This is projected onto a Fermacell formwork base, plated on a secondary wooden frame, itself fixed to a primary concrete frame. Non-structural, hemp concrete gives the project great thermal comfort and comfort in use.

Building users opinion

We recently met a family living in the building for a film shoot, made up of a couple and an infant. They told us that they found the apartments well designed, well sized. They appreciate the through side of the housing because they benefit from light and sun throughout the day. They also told us about the thermal comfort felt and the low loads in terms of energy. But above all, they are aware of the construction method and the media impact of this building due to the use of hemp concrete and told us of their great pride in living in this building. We did not expect this and were very happy about it because we place the human being at the heart of our concerns and we believe that the pride linked to the habitat is very important. At the end of the construction site, we placed frames in the hall with, for one, photos of the construction of the building at the time of the projection of the hemp and in the other a sample of hemp concrete as a memory of the constructive way. These executives are still there... Pedagogy seems important to us.

If you had to do it again?

This project, because it was innovative, was very time-consuming and I think that we did not devote enough time and energy to the design and layout of the garden which today, with regard to the quality of the building, appears a little poor in its processing. If we had to do it again, we would entrust a mission to a landscape designer so that the garden, aesthetically, environmentally and philosophically, would be consistent with the building.

Photo credit

Cécile SEPTET

Stakeholders

Contractor

Name : Immobilière 3F, Groupe Action Logement

Contact : Adrien BIGGI - 01 40 77 17 08 - adrien.biggi[a]groupe3f.fr

<https://www.groupe3f.fr/>

Construction Manager

Name : North By Northwest Architectes

Contact : Christine DÉSSERT - cdesert[a]nxnw.fr

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

Stakeholders

Function :

LM Ingénierie

Grégoire Mouly - gm.ing[a]club-internet.fr

<https://lmingénieur.fr/>

Structure, thermal, environment

Function :

LM Ingénierie

Laurent Mouly - laurentmouly[a]club-internet.fr

<https://lmingénieur.fr/>

Structure, thermal, environment

Function : Environmental consultancy

WOR Ingénierie

Sylvain Mansois - s.mansois[a]bet-wor.com

<https://www.bet-wor.com/>

Fluids and BIM management consultancy agency

Function : Environmental consultancy

MOTEEC Ingénierie

Christophe LECONTE - etude[a]moteec.fr

<https://www.moteec-ingenierie.fr/>

Project economist

Type of market

Allocation of works contracts

Separate batches

Energy

Energy consumption

Primary energy need : 41,72 kWh/m².an

Calculation method : RT 2012

Envelope performance

More information :

U_{wall} = 0.32 W/m².K / U_{roof} = 0.22 W/m².K / U_{w joinery} = 1.4 W/m².K / U_{low floor} = 0.19 W/m².K

Renewables & systems

Systems

Heating system :

- Condensing gas boiler
- Individual gas boiler

Hot water system :

- Condensing gas boiler
- Individual gas boiler

Cooling system :

- No cooling system

Ventilation system :

- Humidity sensitive Air Handling Unit (Hygro B)

Renewable systems :

- No renewable energy systems

Other information on HVAC :

Heat recovery from gray water for the production of domestic hot water.

Environment

Urban environment

Land plot area : 245,00 m²

Products

Product

Hemp concrete

Product category : Structural work / Structure - Masonry - Facade

Costs

Construction and exploitation costs

Total cost of the building : 1 693 265 €

Carbon

Carbon sink

The project is designed in hemp concrete sprayed on a Fermacell formwork base, plated on a secondary wooden frame, itself fixed to a primary concrete frame. A non-structural material, hemp concrete gives the project great thermal comfort and comfort in use. It allows a significant reduction in losses, the establishment of a clean site and the establishment of a positive carbon balance. Its lightness, its ease of implementation, its speed of execution presented here, with regard to the constraints of the site, an undeniable interest (fragility of the basement, very reduced dimensions of the plot, height of building).

The assembly of the primary structure with pre-walls, then pre-concrete slabs is quick and easy. The crane is only present during this phase. The wooden framework on the facade is prefabricated in Ile-de-France from a biosourced and light material. The bay panels are prefabricated and the carpentry complex is assembled in the factory. Hempcrete is a biosourced and innovative insulator. It is projected onto a Fermacell formwork base and then covered with a lime plaster.

GHG emissions

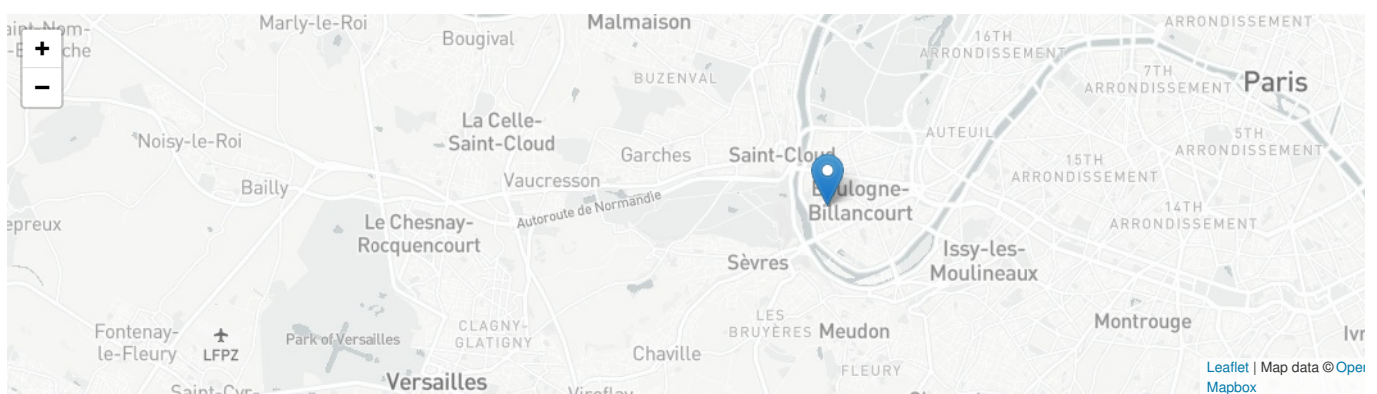
GHG in use : 7,80 KgCO₂/m²/an

Contest

Reasons for participating in the competition(s)

Le projet constituait une équation difficile à résoudre entre une parcelle exiguë (245m²), une emprise constructible restreinte (122m²), et la hauteur possible (R+8), impliquant nécessairement un ascenseur pour des logements accessibles aux personnes à mobilités réduites. La réponse apportée par l'équipe MOE consiste en un pallier desservant deux logements par niveaux (deux T2 ou un T1 et un T3). Les cuisines sont ouvertes sur les séjours afin de fournir l'ensoleillement de toutes les pièces. Au dernier niveau, on trouve un T3 et un T5 duplex, traversants, profitant d'une terrasse à la vue dégagée sur Boulogne et son bois. Le confort intérieur des logements est qualifié par du chanvre, son effet de paroi chaude et sa régularité hygrothermique.

Le projet vient se nicher entre deux immeubles de 8 et 10 étages construits dans les années 80. L'ajout d'une pièce contemporaine, entre ces deux bâtis devait permettre leur suture par la mise en place d'une écriture architecturale sobre et lisible. Le socle du bâtiment s'élève sur 2 niveaux afin d'assurer la continuité visuelle. Il est traité en brique pleine afin d'affirmer sa solidité et son lien avec le sol. L'enduit à la chaux en façade dialogue avec la pierre calcaire de la ville. Les cadres et les volets en bois affirment la domesticité du seuil entre la rue et l'espace d'intimité intérieur.



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