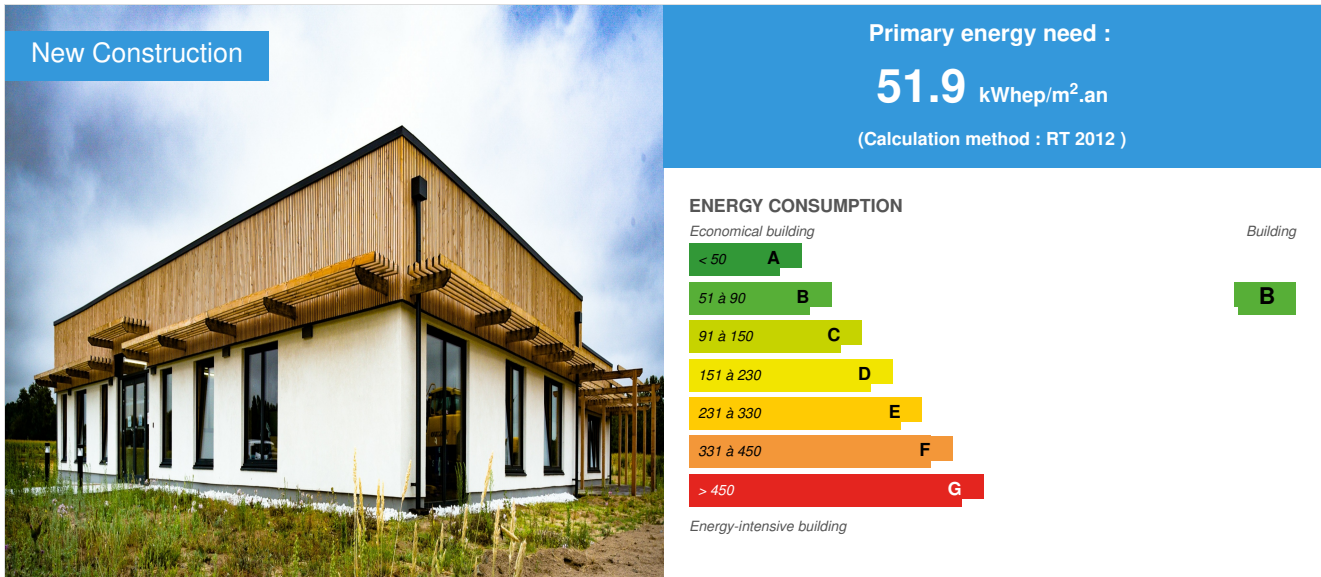


Head office Hemp'it

by Margaux PETILLON / 2021-03-26 10:57:58 / France / 5144 / FR



Building Type : Office building < 28m
Construction Year : 2019
Delivery year : 2020
Address 1 - street : 6 rue Louis Lumière 49250 BEAUFORT-EN-VALLEE, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 472 m² SHON
Construction/refurbishment cost : 700 000 €
Cost/m² : 1483.05 €/m²

General information

Hemp construction showcase

The building is intended to accommodate research and development activity around hemp. The hemp developed in this way is intended for sectors such as textiles, the food industry and even construction. In a development logic, the building must be an example of hemp construction and a showcase for this research center as for the sector. For this reason, hemp concrete walls were intentionally left raw. The energy performance as well as the comfort of use of the building are key criteria for the company.

Low-tech and biobased energy efficiency

The bioclimatic design of the building is based on proven and low-tech principles: sun screens on the facade, a central patio that allows natural ventilation, a layout of the premises according to the course of the sun and facades adapted in terms of opening. To this is added a reflection on the materials with an insulated wooden structure in hemp concrete and cellulose wadding chosen for their density favorable to summer comfort. In short, an energy efficient building with a low carbon impact based on simple principles and requiring little maintenance.

Technical description

The wooden post-beam structure is clad with a mantle wall in wood frame insulated in wood fiber and hemp concrete. The insulated cellulose wadding roof accommodates the photovoltaic solar panels. The exterior joinery is made of mixed materials interior wood and exterior aluminum. The wall finishes are treated with lime-hemp plaster and bio-based paint with very low VOC content. A double-flow ventilation allows the renewal of the air with preheating in winter and cooling during the night period in summer.

Sustainable development approach of the project owner

HEMP-it is an agricultural cooperative company for the production and marketing of hemp seeds for industries such as textiles, agribusiness and construction.

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Architectural description

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See more details about this project

<http://can-ia.fr/bureaux-laboratoires-sarthe/>

Photo credit

Can-ia



Stakeholders

Contractor

Name : Hemp'it

Contact : c.fevrier[a]hemp-it.coop

<https://hemp-it.coop/>

Construction Manager

Name : CAN-ingénieurs architectes

Contact : contact[a]can-ia.fr

<http://can-ia.fr/>

Stakeholders

Function : Thermal consultancy agency

AXENERGIE

contact[a]axenergie.com

<http://www.axenergie.com/>

BE Thermal

Function : Company

JUSTEAU

V.R.D. / Big work

Function : Company

TRILLOT

Timber frame / Roofing / Exterior walls

Function : Company

LEVEQUE & CIE

Sealing

Function : Company
GAUBERT – BAZANTE

Exterior wood furnishings

Function : Company
LANGLOIS-SOBRETI

Partitions / Linings / Ceilings / Interior joinery / Modular partitions

Function : Company
GOUIN DECORATION

Flooring and earthenware / Painting

Function : Company
AJILIT

Plasters

Function : Company
EIB

electricity

Function : Company
MISSENERD

Heating / Ventilation / Plumbing

Function : Company
PHOTOVOLT

Photovoltaic

Type of market

Global performance contract

Energy

Energy consumption

Primary energy need : 51,90 kWh_{ep}/m².an

Primary energy need for standard building : 70,00 kWh_{ep}/m².an

Calculation method : RT 2012

Envelope performance

More information :

The envelope is composed of a wooden frame wall with hemp concrete infill, which allows better inertia. The exterior walls are composed as follows: lime plaster 20 mm (or wood cladding), insulating rain screen and plaster support in 80 mm wood fiber, hemp concrete 240 mm, interior lime-hemp plaster 20 mm . The roof is insulated with 300mm cellulose wadding between uprights and 75mm outside to cut thermal bridges.

Building Compactness Coefficient : 0,88

Renewables & systems

Systems

Heating system :

- Electric radiator
- Aerotherm Heater

Hot water system :

- Individual electric boiler

Cooling system :

- No cooling system

Ventilation system :

- Natural ventilation
- Nocturnal Over ventilation
- Double flow heat exchanger

Renewable systems :

- Solar photovoltaic

Renewable energy production : 115,00 %

Environment

Urban environment

Land plot area : 42 000,00 m²

Built-up area : 1,10 %

The building is located in a rural area, at the entrance of a ZAC. The colors of the natural materials - wood cladding and light mineral plasters - allow better integration into the site. A Hemp'it factory is currently under construction north of the footbridge.

Costs

Construction and exploitation costs

Total cost of the building : 700 000 €

Health and comfort

Indoor Air quality

The use of hemp concrete for the walls induces an absence of organo-volatile compounds, and contributes to the sanitary quality of buildings by passively regulating the humidity in the premises. It reduces the problems of condensation and mold on the walls, common in conventional buildings. Hemp concrete does not emit VOCs: the manufacturers who sell the products certify that their hemp concrete has A + sanitary labeling.

Comfort

Health & comfort :

The friendly spaces open to the terrace under pergolas or the patio ensure a certain level of comfort in all seasons. The orientations in connection with the course of the sun and the patio guarantee a natural solar contribution in each workspace and circulation, while protecting oneself from the summer thermal input by console sunshades on the southern facades and Where is.

The materials used for the construction are healthy and the hemp ensures hygrometric regulation for the benefit of ambient comfort, summer and winter. The surface temperature of the walls is balanced, making it possible to avoid cold wall phenomena. Hempcrete acts as a natural air conditioner all year round thanks to the latent heats of state changes that clip indoor temperatures.

Acoustic comfort :

Hemp concrete has a sound absorption coefficient of 0.8.

Daylight factor : De 65 à 100% pour les bureaux et accueil

Carbon

GHG emissions

GHG in use : 2,00 KgCO₂/m²/an

Methodology used :

Calculations carried out with the ThBCE2012 engine designed by CSTB

Life Cycle Analysis

Eco-design material :

Hemp concrete is one of the first building materials to have had a life cycle analysis. What is more, environmentally friendly: 48 kg of CO₂ / m² stored (ACVINRA 2005 on TRADICAL 70 with chènevotte and wooden frame)

The rest of the bio-based materials (wood, wood fiber, cellulose wadding) also have a very low environmental impact.

Contest

Reasons for participating in the competition(s)

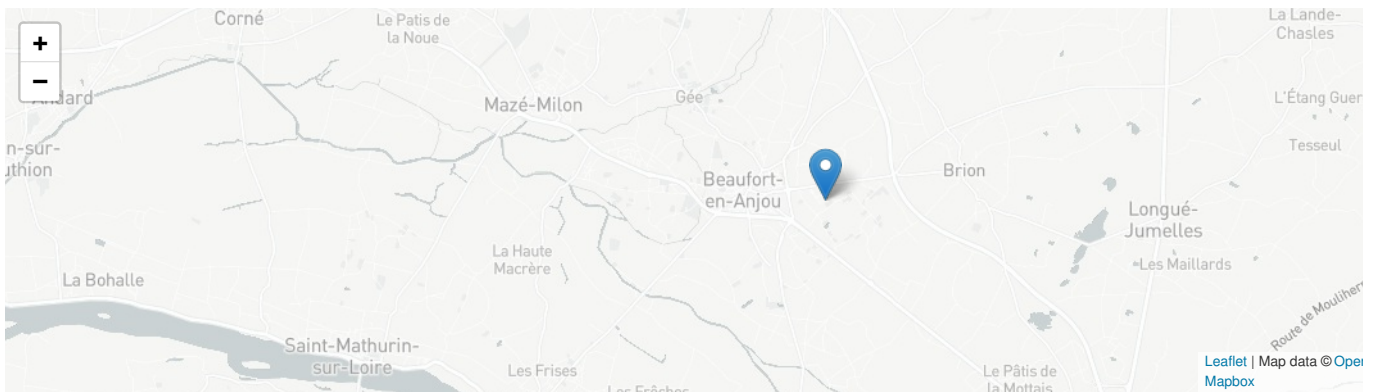
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Building candidate in the category



Santé & Confort



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