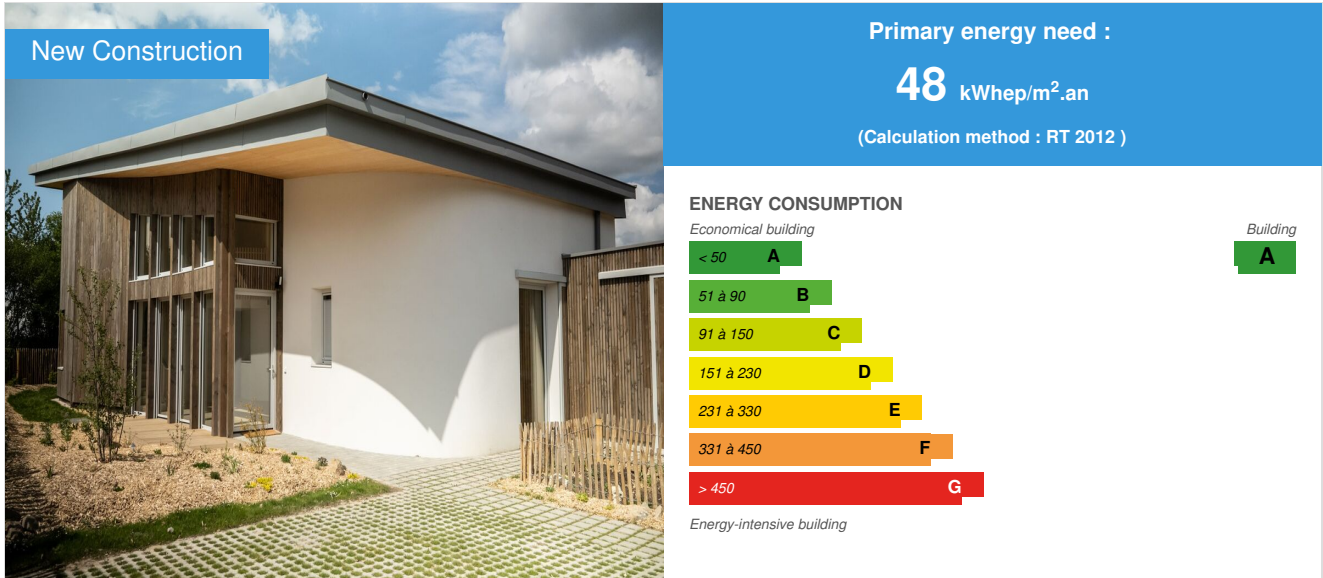


Footprint

by Florence DHOMMÉ / 2022-09-12 00:00:00 / France / 1285 / FR



Building Type : Isolated or semi-detached house
Construction Year : 2021
Delivery year : 2022
Address 1 - street : RUE RENE DUMONT 49070 BEAUCOUZÉ, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 130 m² SHON

Certifications :



Proposed by :



General information

The Empreinte house is an initiative designed and piloted by ERB, a General Construction Company from Chalonnes-sur-Loire (Maine et Loire).

The challenge taken up by Empreinte was to show that it is possible to rethink the impact of construction, alone responsible for nearly 20% of carbon emissions in France, that operational solutions exist to respond to the environmental emergencies of the sector. The project was designed as a demonstrator of new building technologies.

The project finally brought together a collective of 25 actors (start-ups, SMEs and multinationals) from the Pays de la Loire Region, with complementary know-how and expertise.

This network has enabled the construction of a 130 m² detached house with a very refined architectural style.

All the techniques and materials have been sourced and selected on the basis of very precise specifications combining circular economy, energy and environmental performance parameters.

At each stage of the project, innovative solutions have been deployed to reduce the carbon footprint of the construction as much as possible while optimizing the comfort of the inhabitants.

- Empreinte called on **Terra Innova** to extract the earthwork, which was then reused by neighboring agricultural land.
- The foundations and the concrete slab made it possible to test **Neolith aggregates for the first time**, resulting from the fossilization of waste, a new technology that launches a local and circular waste economy.
- The walls were made of **recycled polymer foam** . They were bred in additive construction (3D printing) by **Batiprint 3D** .
- **The wall insulation is made of recycled PET, the roof insulation is made of cellulose wadding.**
- All the interior paints of the house are **paints recycled by Circouleur** , recognized for their environmental performance but also for reducing interior pollution. Circouleur is the leading manufacturer of recycled paint in France: a unique concept that allows the recovery and transformation of unused paint.
- On the interior floors, a **clay screed** was laid. It allows the Empreinte house to take advantage of the advantages of clay in the home (natural comfort, thermal and humidity regulator, healthy materials, no VOCs, etc.). The screed was made by **Argilus** , the leading French manufacturer of ecological clay-based coatings and materials.
- ERB has worked with **Biosfaire** , which brings together a set of **suppliers of biobased products for construction**. The Biosfaire teams, for example, suggested using cork for the floors in the rooms.

The green spaces of the land, designed as integrated into the plans of the house, were studied by **Other Landscapes** in order to develop them and optimize the opportunities for permaculture (sloping roof to collect rainwater, selected species, etc.).

Beyond the construction site, Empreinte also called on several local players to **furnish the house** , seeking **solutions in line with the construction approach implemented** . We find in particular [Revisit](#) (reuse, circular economy, etc.).

[Visit the project website](#)

See more details about this project

<https://www.concept-empreinte.fr/>

Photo credit

ERB

Stakeholders

Contractor

Name : ERB

Contact : FLORENCE DHOMMÉ - empreinte[a]erb-batiment.fr

<https://www.concept-empreinte.fr/>

Construction Manager

Name : ARCHITECTE JOHANN SAN

Contact : JOHANNE SAN

<https://johanne-san.fr/>

Stakeholders

Function : Environmental consultancy

ALTER, anjou loire territoire

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

Developer in charge of the Echats eco-district on behalf of the town hall of Beaucouzé

Function : Company

Batiprint3D

<https://www.batiprint3d.com/fr>

Supplier of innovative solutions to modernize the construction sector

Function : Other consultancy agency

AB Ingénierie

<https://www.ab-ingenierie.com/>

Project management study office

Function : Structures calculist

Even Structures

<https://www.even-structures.fr/>

Function : Company

PIRO CIE

<https://piro-cie.fr/>

Technological solutions

Function : Company

Terra Innova

<https://terrainnova.fr/>

Agroecological development of site land for agriculture

Function : Company

Circouleur

<https://circouleur.fr/>

Recycled paint

Function : Manufacturer

Argilus

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

Manufacturer of ecological clay coatings and materials

Function : Environmental consultancy

Autres paysages

<https://www.autres-paysages.com/>

Landscaper

Function : Company

Néolithe

<https://neolithe.fr/>

Transformation of non-recyclable waste into aggregates

Function : Environmental consultancy

Biosfaire

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

Vendor

Function : Construction company

ACB Construction

<https://www.acb-constructions.fr/>

Specialization in wood and joinery

Function : Company

Anjou Béton

concrete supplier

Function : Company

JCM Confort

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

Specialist in renewable energies, innovative heating systems

Function : Company

RFE

Specialist in electrical equipment and home automation

Function : Company

YASKAWA

<https://www.yaskawa.fr>

Industrial robotics and automation systems

Function : Environmental consultancy

KRYZALID

<https://kryzalidfilms.com/>

Audiovisual creation in charge of films around the project

Function : Company

MP Maçonnerie Project

Masonry

Revisit

<https://revisit.fr/>

Creation of sustainable spaces and tailor-made reusable furniture

Energy

Energy consumption

Primary energy need : 48,00 kWh/m².an

Calculation method : RT 2012

Renewables & systems

Systems

Heating system :

- Heat pump

Hot water system :

- Heat pump

Cooling system :

- No cooling system

Ventilation system :

- Double flow heat exchanger

Renewable systems :

- No renewable energy systems

Environment

Urban environment

Land plot area : 340,00 m²

The project is located in the town of Beaucoz  (Maine-et-Loire) which is part of the Angers attraction area. In this city, special attention is paid to the well-being of the inhabitants, in particular thanks to more than 40 hectares of parks and gardens. It is also an attractive economic zone with many infrastructures and the establishment of companies.

As part of its environmental policy, the city is carrying out 3 major programs to promote sustainable housing and limit the artificialization of soils. Empreinte is located in one of these projects, the Nouveaux Echats eco-district, which is implementing a strategy of densification, sustainable development and citizen participation.

Products

Product

THERMODYNAMIC DUAL FLOW CMV - PKOM4 RANGE

GECO

2A rue de l'embranchement - 67116 REICHSTETT

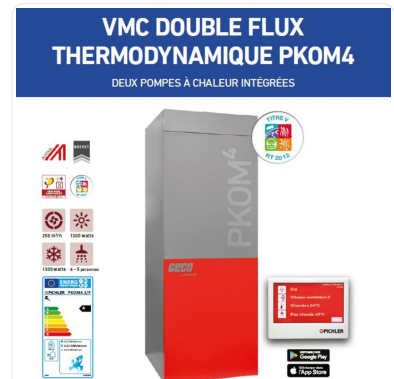
<https://geco.fr/>

Product category : Aménagement extérieurs / Gestion des eaux pluviales

VMC thermodynamic double flow

The GECO PKOM4 classic is a 4 in 1 system.

- It ensures the renewal of the air thanks to its double flow ventilation function.
- It heats and cools the air via an Air/Air heat pump
- It ensures the production of DHW via an Air/Water heat pump



Costs

Energy bill

Forecasted energy bill/year : 500,00 €

Real energy cost/m2 : 3.85

Real energy cost/Dwelling : 500

Circular Economy

Reuse : same function or different function

Batches concerned by reuse :

- Isulation

For each batch : Reused Materials / Products / Equipments :

The PET foam used for the insulation of the house comes from the recycling of 15,000 plastic bottles.

Contest

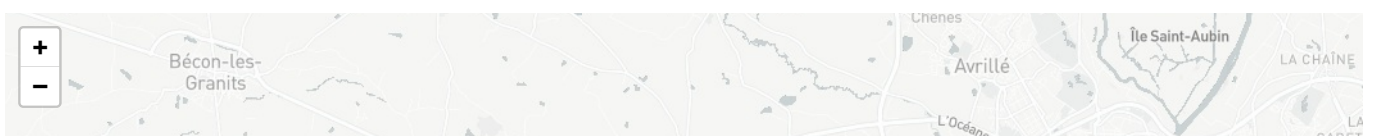
Reasons for participating in the competition(s)

EMPREINTE in a few figures is:

- More than 20 collaborating partners on this project
- Tons of inert waste recovered from construction waste
- E2C2 building performance
- Thousands of bottles recycled and reused in home insulation

But still :

- Rainwater from the roof recovered and reused for the needs of the house
- A permaculture garden to recreate an ecosystem in the plot of the house





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