

## Individual housing in the "Cormier" eco-district

by Emmanuel d'Envirobot Centre / 2019-06-17 12:10:25 / Francia / 4461 / FR



Primary energy need :

**71.1** kWhep/m<sup>2</sup>.an

(Calculation method : )

**Building Type** : Isolated or semi-detached house

**Construction Year** : 2017

**Delivery year** : 2017

**Address 1 - street** : Ecoquartier du Cormier 37370 BUEIL EN TOURAINE, France

**Climate zone** : [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area** : 144 m<sup>2</sup>

**Construction/refurbishment cost** : 270 737 €

**Number of Dwelling** : 2 Dwelling

**Cost/m2** : 1880.12 €/m<sup>2</sup>

Proposed by :



### General information

In the eco-district of "Cormier", the town hall of Bueil en Touraine has made the ambitious choice of straw construction for the first two constructions. The goal is to promote a logic of construction respectful of the environment and ahead of the question of energy consumption thanks to bioclimatic and efficient housing.

This project was carried out using a **low tech approach** : Bioclimatic orientation and installation of inexpensive equipment for use and maintenance. The performance was sought without going to the ultra performance of the passive or positive.

**Straw was chosen for an ecological dimension because it is not transformed.** However, it required more structural wood for its implementation.

**Bio-based materials have been favored even in the lathing of the counter-partitions** - not metal rail but wood. A coating on wood fiber with lime was realized. Initially, it was planned lime plaster on straw. Unfortunately, with the prefabrication of the caissons in the workshop, a more traditional process was chosen: plaster applied on a rigid wood fiber rainshield.

Use of raw wood chestnut cladding, landscaping of gardens, compacted limestone paths, chestnut fences with random height boards.

The constructions respect the specifications of the housing estate , written so that the local typology of the building is respected and fits harmoniously on the scale of the borough, known for its collegiate. However, to conform a project straw and its thick walls in the templates imposed was not simple.

## Sustainable development approach of the project owner

This project was carried out using a low tech approach: Bioclimatic orientation and installation of inexpensive equipment for use and maintenance. The performance was reached without going to the ultra performance of the passive or positive. The buildings comply with the specifications of the subdivision, written so that the local typology of buildings is respected and fits harmoniously on the scale of the town, known for its collegiate.

## Architectural description

The two homes offered are a T3 and a T4 classic bill because of the nearby presence of the town. The real challenge has been to respect the local PLU, while using straw walls wider than what is traditionally done.

## See more details about this project

<http://www.envirobatcentre.com/envirotheque/observatoire-des-realisations/fiches-envirobat/biosource/logements-individuels-ecoquartier-cormier-277.html?article=2972>

## Photo credit

Envirobat Center

## Stakeholders

### Contractor

Name : Commune de Bueil en Touraine

### Construction Manager

Name : Ivana Rho Architecte

<http://au-d.fr/>

### Stakeholders

Function : Environmental consultancy

Qualilconsult

02.47.85.32.13

<http://www.groupe-qualiconsult.fr/>

Control office

Function : Thermal consultancy agency

SMAL Ingénierie

<https://smal-ingenierie.jimdofree.com/>

Function : Structures calculist

SMAL Ingénierie

<https://smal-ingenierie.jimdofree.com/>

Function : Others

Francis Gigou

02 54 72 18 74

Economist

Function :

ISOPAILLE

bienvenue[at]isopaille.fr

Function :

SARL EVL

02 54 42 88 77

## Energy

### Energy consumption

Primary energy need : 71,10 kWh<sub>ep</sub>/m<sup>2</sup>.an

Breakdown for energy consumption : The energy consumption displayed is that of T4. For the T3 EP = 77.8 kWh<sub>ep</sub> / m<sup>2</sup>.a For heating: Housing T3: 42.5 kWh<sub>ep</sub> / m<sup>2</sup>.an Housing T4: 33.4 kWh<sub>ep</sub> / m<sup>2</sup>.an Solar collectors produce 54% of DHW needs

### Envelope performance

More information :

Peripheral walls: 0.145 W / m<sup>2</sup>.K

Low floor: 0.143 W / m<sup>2</sup>.K

Roofing: 0.11 W / m<sup>2</sup>.K

Joinery: double glazed low emissivity and Sw winter > 0,39

Description of the envelope:

- Peripheral walls: It was designed two types of walls, normal and reinforced inertia to provide sufficient summer comfort. Initially, it was envisaged that the inertia walls are coated with clay-lime. However, for budgetary reasons, these have been replaced by two plates of fermacell. Murs exteriors: plaster / wood fiber / wood frame + straw / osb / counter lathing wood (will promote bio-based).

- Inner walls: Interior partitions: gypsum board partitions insulated on rails

- Intermediate floor: Wood, OSB, screed, natural linoleum

- Floor Low on crawl space: Foundations concrete / beams concrete slabs. TMS 12cm (the only non-biosourced material of the project). The choice of tiling and screed (5cm) are voluntary, as the screed upstairs to ensure sufficient inertia to provide comfort when the house is heated, also in summer.

- Roof: T3: Attic insulation of cellulose wadding / farmhouses and slate roof. T4: steam brake / I-beam insulated wood fiber / wadding on the horizontal part / rain cover / slate cover

Indicator : n50

Air Tightness Value : 0,28

Users' control system opinion :

**Airtightness** in the air of T4. For T3: 0.49 m<sup>3</sup> / (hm<sup>2</sup>)

## Renewables & systems

### Systems

Heating system :

- Others
- Wood boiler

Hot water system :

- Solar Thermal

Cooling system :

- No cooling system

Ventilation system :

- compensated Air Handling Unit

Renewable systems :

- Solar Thermal

Other information on HVAC :

Heating and Emitters: Pellet stove, Dryer.

Ventilation: VMC single flow with a flow rate regulation according to the humidity in the rooms

Sanitary Hot Water: Solar collectors that produce 54% of the DHW needs.

## Environment

### Urban environment

This T3 and T4 are the first buildings of a future eco-district located in a sparsely populated area. Each house has its own private garden.

## Products

### Product

Fermacell

## Costs

### Construction and exploitation costs

Total cost of the building : 270 737 €

## Carbon

### Life Cycle Analysis

Eco-design material :

#### Materials implemented

- Structure: Wood Frame
- Insulation: Straw
- Structure wood: Chataigner and Douglas
- External coating: Thick lime plaster

#### Quantity Bio-based materials

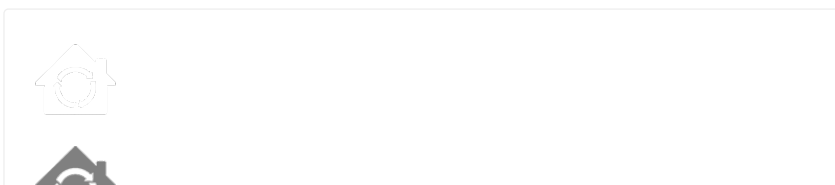
- Total project area: 144 m<sup>2</sup> (S.Plancher)
- Total mass of MBS implemented: 178 Kg / m<sup>2</sup>
- Mass out of wood work and layout: 22 Kg / m<sup>2</sup>

## Contest

### Reasons for participating in the competition(s)

- Structure: Wood Frame
- Insulation: Straw
- Structure wood: Chataigner and Douglas
- External coating: Thick lime plaster

### Building candidate in the category





Bas Carbone



Prix du public



Prix des Etudiants



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