


## E+C- certified house by Ecolocost

by Maxime BRARD / 2017-01-29 14:12:40 / Francia / 7398 / FR

New Construction



Primary energy need :

-68 kWhep/m<sup>2</sup>.an

(Calculation method : RT 2012 )

**ENERGY CONSUMPTION**

*Economical building*

< 50	<b>A</b>
51 à 90	<b>B</b>
91 à 150	<b>C</b>
151 à 230	<b>D</b>
231 à 330	<b>E</b>
331 à 450	<b>F</b>
> 450	<b>G</b>

*Energy-intensive building*

*Building* **A**

**Building Type** : Isolated or semi-detached house  
**Construction Year** : 2016  
**Delivery year** : 2017  
**Address 1 - street** : 95120 ERMONT, France  
**Climate zone** : [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area** : 109 m<sup>2</sup>  
**Construction/refurbishment cost** : 130 000 €  
**Number of Dwelling** : 3 Dwelling  
**Cost/m2** : 1192.66 €/m<sup>2</sup>

**Certifications :**



### General information

Two months after receiving the E+C-label by the Minister of Housing and having reached the Energy 3 and Carbon 1 levels, Ecolocost decided to have this house certified with the new BEPOS Efficacité 2017 label to demonstrate its qualities.

The purpose of this house is to demonstrate the feasibility of a revolutionary house with traditional looks, all in a record time for 200 € more expensive per square meter than a house solely following the French RT2012 regulation. Important points are:

- Its compactness in order to use the least possible floor area and remain desirable. A functional 3-bedroom house of 82m<sup>2</sup> that respects the fundamentals of a quality habitat in all points of view (air, noise, comfort)
- Its affordable cost: the house was designed to cost 1/3 of the average monthly income of a family of first-time homeowners in highly urbanized areas, about 1,000 € per month land included. Without any energy expenditure since its low electricity consumption is totally covered by its production to reach the annual equilibrium.
- Its carbon impact, thanks to wood and high quality materials that are fully recyclable, as well as high-quality technical equipment. This house is truly sustainable, can be assembled in a single day and generates virtually no construction waste and no nuisance for the residents.

The goal is to be able to massify the production of affordable positive energy homes by adapting to all architectural types and considerably reducing the construction time.

## Sustainable development approach of the project owner

The objective of this project was to make a low-cost 3-bedroom house of very high quality that could be BEPOS Effinergie 2017 certified in the financial sense of the term (-0 € over the year) by not using fossil energy sources for its use.

## Architectural description

We favored a cubic architecture with 2 solid facades to be able to copy this model in band. This timber frame house has a classic appearance where it is impossible to distinguish the difference with a masonry house.

## Building users opinion

The house will be inhabited starting June 1st, 2017, it is planned to study its real life cycle from this date

## If you had to do it again?

We have concerns about the installation of the CMV which was a bit laborious, we will do the same on the same ground by addressing this problem upstream.

## See more details about this project

<http://www.ecolocost.com>



## Stakeholders

### Stakeholders

**Function :** Construction company

Ecolocost

Maxime Brard

<http://www.ecolocost.com>

### Contracting method

Lump-sum turnkey

## Energy

### Energy consumption

**Primary energy need :** -68,00 kWh/m<sup>2</sup>.an

**Primary energy need for standard building :** -35,00 kWh/m<sup>2</sup>.an

**Calculation method :** RT 2012

**CEEB :** 0.0003

**Breakdown for energy consumption :** Heating 15,7 Domestic hot water 28,6 lighting 3,8 auxiliary 11,3

### Real final energy consumption

**Final Energy :** 50,00 kWh/m<sup>2</sup>.an

### Envelope performance

**Envelope U-Value :** 0,10 W.m<sup>-2</sup>.K<sup>-1</sup>

**More information :**

Passive floor, retained Ue: 0,093 W/m<sup>2</sup>.°C

Outside ecolocost wall, retained U-value: 0,111 W/m<sup>2</sup>.°C

Floor under roof, retained U-value: 0,105 W/m<sup>2</sup>.°C

**Indicator :** n50

Air Tightness Value : 0,19

## More information

Project ERMONT - construction of a detached house (13/06/16) Annual theoretical operating balance after the RT 2012 Consumption of electrical energy five uses + virtuous electrodomestics \* 4044,8 kWh/year Theroretical operating cost 671,0 € TTC / year Photovoltaic production 4031,9 kWh / year Autoconsumption and annual resale \*\* - 838,6 € TTC / year Total balance -167,6 € TTC / year - \* Hypothesis: Virtuous electrodomeestic consumption 13.71 kWh/m²SHONRT.an - \*\* Hypothesis: Self-consumption 50% resale 50% - Resale cost in integration 0.2501 € TTC / kWh - Electricity cost: 0.1659 € TTC / kWh

## Renewables & systems

### Systems

#### Heating system :

- Electric radiator
- No heating system

#### Hot water system :

- Heat pump

#### Cooling system :

- Others

#### Ventilation system :

- Double flow heat exchanger

#### Renewable systems :

- Solar photovoltaic

Renewable energy production : 100,00 %

#### Other information on HVAC :

The Compact P system is a modular system offering not one, but several solutions. The Compact P is a ventilation and heating system that provides home ventilation, heat recovery and domestic hot water production. This ensures a daily renewal of the air by evacuating dust, odors and excess moisture for a healthy and pleasant indoor atmosphere. When it is warmer inside and outside the house, an integrated by-pass allows fresh air to penetrate directly to cool to the maximum without using extra energy.

#### Solutions enhancing nature free gains :

Nilan COMPACT P

## Environment

### Urban environment

Land plot area : 2 090,00 m<sup>2</sup>

Built-up area : 55,00 %

Land located in the town of Ermont 500 m from the main station and near the motorway axes

## Products

### Product

Compact P

NILAN

harold monnier HAPCO +33 2 40 72 29 76

<http://www.nilan.dk/fr-fr/premiere-page/solutions/solutions-particuliers/solutions-completes/compact-p>

Product category : Table 'c21\_italy.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '3'

The Compact P system is a modular system offering not one, but several solutions. This allows you to choose the solution best suited to the size of your home and the needs of your family. The first element of a Compact P



solution is always the Compact P itself, the true heart of the system. The Compact P is a supplemental ventilation and heating system ensuring your home ventilation, heat recovery and domestic hot water production. This ensures a daily renewal of the air by evacuating dust, odors and excess moisture for a healthy and pleasant indoor atmosphere. When it is warmer inside and outside the house, an integrated by-pass allows fresh air to penetrate directly to cool to the maximum without using extra energy. If you are looking for a central heating solution, we recommend a Compact P solution with an aerothermal or geothermal heat pump. Only three systems of ventilation and heating in the world benefit from the famous certification passive house, and the Compact P of Nilan is one of them. This certification means that the Compact P is approved for the passive habitat without having to provide additional documentation.

This machine is ideal in terms of simplicity for a 4 in 1 system (ventilation, heating, DHW and refreshment)

## Costs

### Construction and exploitation costs

Reference global cost : 113 000,00 €

Renewable energy systems cost : 15 000,00 €

Reference global cost/Dwelling : 113000

Cost of studies : 5 000 €

Total cost of the building : 130 000 €

### Energy bill

Forecasted energy bill/year : -187,00 €

Real energy cost/m<sup>2</sup> : -1.72

Real energy cost/Dwelling : -62.33

## Health and comfort

### Water management

Consumption from water network : 87,00 m<sup>3</sup>

Water Consumption/m<sup>2</sup> : 0.8

Water Consumption/Dwelling : 29

### Indoor Air quality

VMC dual flow with filters

### Comfort

**Acoustic comfort :** The house is equipped with screeds on the 2 levels. The distribution walls are 10 or 15 cm

## Carbon

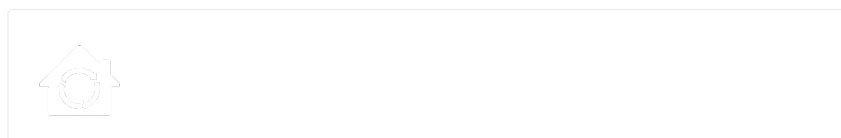
### GHG emissions

GHG in use : 2,10 KgCO<sub>2</sub>/m<sup>2</sup>/an

Building lifetime : 100,00 année(s)

## Contest

### Building candidate in the category





Bas Carbone



Coup de Cœur des Internautes



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