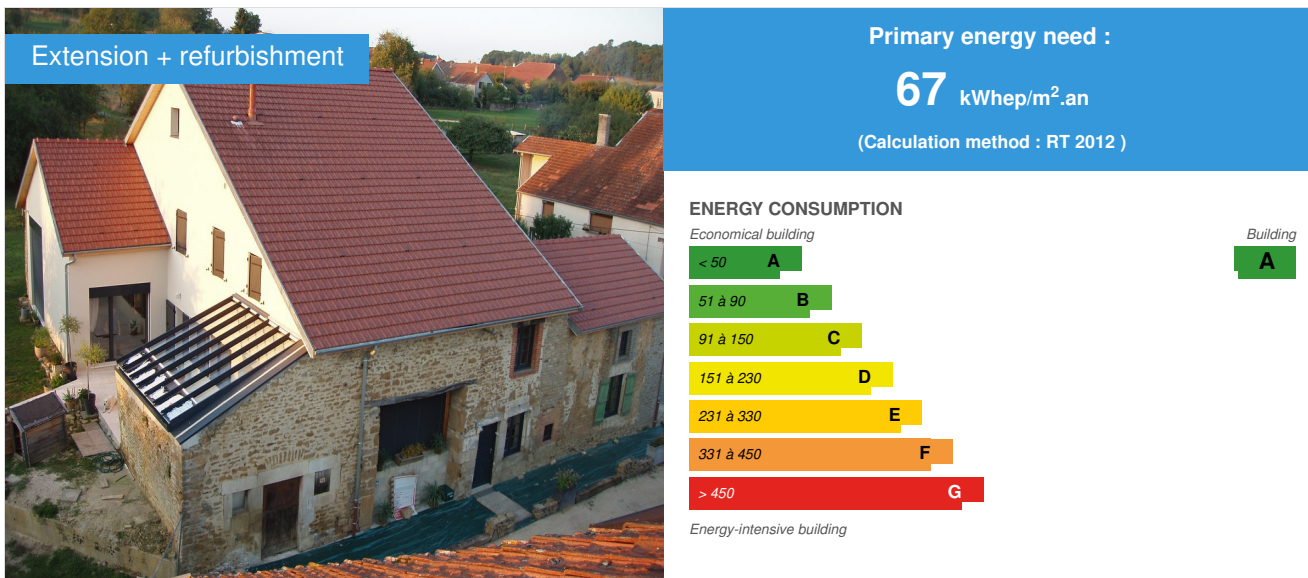


## Farm renovation

by Cédric ROSA / 2017-05-15 09:47:22 / France / 9646 / FR



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

**Construction Year** : 2016

**Delivery year** : 2016

**Address 1 - street** : 52360 NEUILLY L'ÉVÊQUE, France

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

**Net Floor Area** : 230 m<sup>2</sup> SHON RT

**Construction/refurbishment cost** : 390 000 €

**Cost/m<sup>2</sup>** : 1695.65 €/m<sup>2</sup>

### General information

The project is an overall renovation of an old farm in limestone rubble on the plateau of Langres. The project is passive criteria of the new construction and is being certified. Particular attention was paid to the survival of the old walls preserved and integration into the site which is in the center of the village next to the Church (classified monument). Taking into account the near and distant environment as well as the surrounding nature makes possible to have a comfortable and energy-saving home. The entire building is insulated by bio-sourced materials and the deconstruction materials of the most damaged walls have made it possible to serve for filtering backfilling as well as for the refurbishment of the fence walls for the neighbors.

### Sustainable development approach of the project owner

The objective of this project was to demonstrate that it was possible to make a high-performance renovation while being made from natural or bio-sourced materials. In addition, it was important to reuse the deconstruction materials and to be able to reuse the renovation materials

### Architectural description

Due to its positioning in the area subject to the ABF, there were some constraints on the visible facades of the main street of the village. But there was a desire to maintain the state of mind and the volumes of neighboring buildings and typical of the village and the region

### Building users opinion

The owners are extremely satisfied with the comfort and brightness of their home.  
In addition, low energy consumption is very good news.

## If you had to do it again?

If this were to be done again, the choice of the VMC DF would be different because we have put in a high-performance plate heat exchanger but this imposes additional installations for the good operation (preheating battery, air humidifier for the wooden frame and the occupants ). The choice will therefore be made on a VMC DF with a rotary exchanger with adiabatic cooling. The will of departure was to put a solar hot water production but this was refused by the ABF.

## See more details about this project



### Stakeholders

#### Stakeholders

Function : Thermal consultancy agency

BE THERMAIR

ROSA Cédric

<http://www.thermair.fr>

Thermal dimensioning of the building, dimensioning of the VMC DF, summer and winter thermal comfort, acoustics of the CMV

#### Contracting method

Other methods

### Energy

#### Energy consumption

Primary energy need : 67,00 kWh<sub>ep</sub>/m<sup>2</sup>.an

Primary energy need for standard building : 74,00 kWh<sub>ep</sub>/m<sup>2</sup>.an

Calculation method : RT 2012

Initial consumption : 680,00 kWh<sub>ep</sub>/m<sup>2</sup>.an

#### Real final energy consumption

Final Energy : 35,00 kWh<sub>ef</sub>/m<sup>2</sup>.an

Real final energy consumption/m<sup>2</sup> : 35,00 kWh<sub>ef</sub>/m<sup>2</sup>.an

Year of the real energy consumption : 2 016

#### Envelope performance

More information :

The walls are in wooden frame insulated by cellulose wadding and rigid wood wool supporting natural plaster.

The walls serving as support for the existing rubble wall do not have an ITE in rigid wood wool but a complementary insulation in clay ball between the wood frame and the rubble

Building Compactness Coefficient : 0,21

Indicator : n50

Air Tightness Value : 0,58

Users' control system opinion : No home automation installed

#### More information

The building is passive and most of the consumption is due to the current electrical consumption, in addition to the VMC DF and the hot water tank

### Renewables & systems

## Systems

### Heating system :

- No heating system

### Hot water system :

- Individual electric boiler

### Cooling system :

- No cooling system

### Ventilation system :

- Double flow heat exchanger

🔗 [Système Novus de chez PAUL ventilation](#)

### Renewable systems :

- Other, specify

## Environment

### Urban environment

Land plot area : 4 000,00 m<sup>2</sup>

Built-up area : 4,00 %

The construction is close to the Church of the village which is classified historical monument. It was necessary to allow the project to respect the wishes of the Architect of the Buildings of France, the wishes of the customers and the thermal and technical performances required

## Products

### Product

Traditional timber frame and framework framed by wood wool and cellulose wadding

PASSIV HOME

HOCQUARD JULIEN

🔗 <http://passivhome-construction.com/>

Product category : Gros œuvre / Système passif

Wood frame in rigid interior bracing for double use of the panel (bracing and airtight with an external insulation in rigid wood wool in order to be able to receive cellulose wadding inside the framework.) An isolated technical area has been installed to pass the networks so as not to damage the airtightness



The system is prefabricated in the workshop, which saves considerable time on the construction site so as to be as quickly as possible out of water

## Costs

### Construction and exploitation costs

Cost of studies : 1 500 €

Total cost of the building : 390 000 €

### Energy bill

Forecasted energy bill/year : 1 500,00 €

Real energy cost/m<sup>2</sup> : 6.52

Real energy cost/Dwelling : 1500

## Health and comfort

## Water management

Consumption from water network : 45,00 m<sup>3</sup>

Consumption of harvested rainwater : 20,00 m<sup>3</sup>

Water Self Sufficiency Index : 0.31

Water Consumption/m<sup>2</sup> : 0.2

Water Consumption/Dwelling : 45

The construction is in use and the results of the recovery of rainwater allow to be used in the sanitary, the laundry and all the consumptions which do not have a direct impact on the direct consumption of the users

## Indoor Air quality

The construction using a maximum of natural materials, the air quality is good. The floors are made of reconstituted natural stone, the walls in placo with natural paints, the furniture is mainly made of solid wood to allow the continuity of the use of the farm

## Comfort

**Health & comfort :** Important work has been done on indoor air quality by appropriately dimensioning the VMC DF. Other important points have been worked as brightness by promoting maximum natural light, using maximum solar contributions. The outdoor vegetation makes possible to have natural solar masks and thus to add to the comfort of summer in order to avoid a maximum the summer overheating

**Calculated indoor CO<sub>2</sub> concentration :**

pas de calcul fait

**Measured indoor CO<sub>2</sub> concentration :**

450 ppm en moyenne

**Calculated thermal comfort :** Tp° minimal en hiver: 20°C et maximale en été : 25°C

**Measured thermal comfort :** Tp° minimal en hiver: 20.2°C et maximale en été : 24.7°C

**Acoustic comfort :** The arrangement of the parts and the design of the various walls make it possible to avoid transmission noise by contact. Moreover, the design of the CMV does not allow the transmission of noise by intercom

## Carbon

### GHG emissions

GHG in use : 17,00 KgCO<sub>2</sub>/m<sup>2</sup>/an

**Methodology used :**

Calculation by PHPP

**Building lifetime :** 100,00 année(s)

No LCA calculation on the project therefore no global GHG calculations

### Life Cycle Analysis

**Eco-design material :** All the construction is in wood frame with insulation derived from the wood (cellulose wool, wood wool, ...) it is therefore an important storage of carbon

## Contest

### Building candidate in the category



Santé & Confort





Coup de Cœur des Internautes



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