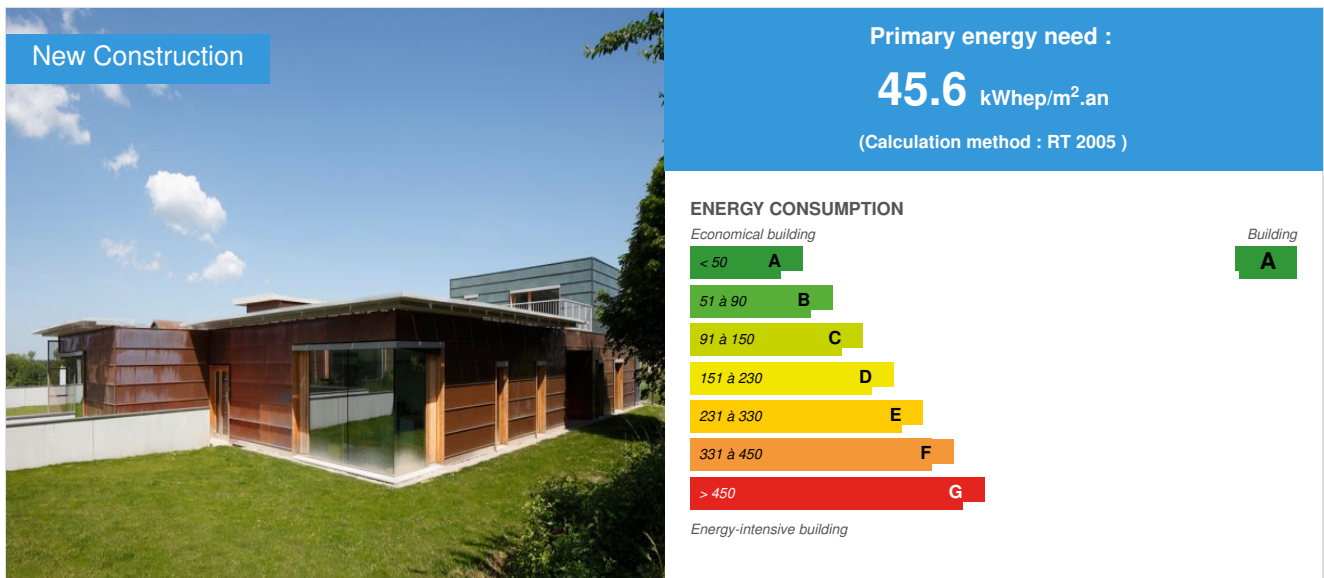


## Nursing home in Badonviller

by Jean-Philippe DONZÉ / © 2013-02-11 11:57:30 / France / © 25829 / FR



**Building Type** : Office building < 28m  
**Construction Year** : 2013  
**Delivery year** : 2013  
**Address 1 - street** : 54540 BADONVILLER, France  
**Climate zone** :

**Net Floor Area** : 801 m<sup>2</sup> SHON  
**Construction/refurbishment cost** : 1 733 977 €  
**Number of Work station** : 9 Work station  
**Cost/m<sup>2</sup>** : 2164.77 €/m<sup>2</sup>

### General information

It is the creation on the former right of Badonviller train station, of a medical center, bringing together different health services. It is a place for doctors, nurses, physiotherapists and a medico-social antenna. It is a nearby service equipment that has the ambition to become a center of excellence in rural areas.

For this, an environmental approach is implemented in order to make a reference building in terms of sustainable development: 160 m<sup>2</sup> of photovoltaic panels and are implemented into a positive energy building (BEPOS - Effinergie).

The nursing home is built around a central garden, which captures energy from the sun to the south and west. In the north, a more closed facade welcomes patients. A central circulation, a kind of internal street through and illuminated roof serves different services. The building is a wooden structure, which uses insulation of 36 cm of tissue and wood wool and a copper cladding. Interior walls of adobe are spread across different services and offer a high inertia of the whole, as well as management of natural humidity, a factor critical to the feeling of comfort of users in a building.

### Sustainable development approach of the project owner

There was in the city team a genuine desire to create a powerful building, emblematic of Badonviller city. Our project management team has therefore endeavored to design the building as efficient as possible (positive energy) in accordance with the principles of sustainable development, that is to say by implementing materials and techniques environmentally friendly: timber frame with insulation cellulose wadding and wood fiber, triple glazing, interior walls bearing adobe (mud compressed) veganism roofing, cladding copper, double-flow ventilation with heat recovery, geothermal drilling vertical for supplying a heat pump, solar protection against overheating summer, photovoltaic panels, etc..

## Architectural description

The nursing home is built around a central garden, which captures energy from the sun to the south and west. In the north, a more closed facade welcomes patients. A central circulation, a kind of internal street through and illuminated roof serves different services. The building is a wooden structure, which uses insulation of 36 cm of tissue and wood wool and a copper cladding. Interior walls of adobe are spread across different services and offer a high inertia of the whole, as well as management of natural humidity, a factor critical to the feeling of comfort of users in a building.

## Building users opinion

The building will be occupied by users beginning of April 2013

## If you had to do it again?

We would have urged the owner to bring a vertical axis wind turbine, in addition to solar panels for on-site production of renewable energy, as we considered during studies.

## See more details about this project

[http://www.mil-lieux.fr/badon/Accueil\\_\\_.html](http://www.mil-lieux.fr/badon/Accueil__.html)



Stakeholders

## Stakeholders

Function : Contractor

Ville de Badonviller

Monsieur Philippe BRENIERE

<http://www.ville-badonviller.fr/>

Function : Construction Manager

sarl d'architecture MIL LIEUX

Monsieur Jean-Philippe DONZÉ

<http://www.mil-lieux.fr>

Function : Thermal consultancy agency

ENERGICO

Monsieur Frédéric BRICE

Function : Structures calculist

OMNITECH SARL

Monsieur Joseph PLEINERT

<http://www.omnitech-ingenieriedubatiment.sitego.fr>

Function : Company

Entreprise GARGANO

Joseph Gargano

<http://www.josephgargano.com>

## Type of market

Global performance contract

Energy

## Energy consumption

Primary energy need : 45,60 kWhEp/m<sup>2</sup>.an

Primary energy need for standard building : 138,35 kWhEp/m<sup>2</sup>.an

Calculation method : RT 2005

Breakdown for energy consumption : Heating: 7.6 kWhEp / m<sup>2</sup> / year ECS: 9.67 kWhEp / m<sup>2</sup> / year Lighting: kWhEp 18.35 / m<sup>2</sup> / year Auxiliary: 10.02 kWhEp / m<sup>2</sup> / year PV: - kWhEp 50.17 / m<sup>2</sup> / year

## Real final energy consumption

Final Energy : -1,70 kWhEf/m<sup>2</sup>.an

## Envelope performance

Envelope U-Value : 0,24 W.m<sup>-2</sup>.K<sup>-1</sup>

More information :

Wood frame structure: double-layer Insulation wood wool (2 \* 6cm) and 26 cm of tissue for U = 0,113 W / (m<sup>2</sup>. K) Earth full low floor: Isolation continuous slab 10cm by PSE, for U = 0,171 W / (m<sup>2</sup>. K) Green roof: Insulation by 30 cm cellulose wadding and 10 cm of PUR for U = 0117 W / (m<sup>2</sup>. K)

Building Compactness Coefficient : 0,86

Indicator : n50

Air Tightness Value : 0,40

## More information

The building was the winner of the call for proposals PREBAT launched by ADEME Lorraine in 2010 (exemplary and demonstrator call for proposals, the minimum required is positive energy for a new building). As such, monitoring the whole building and its consumption is expected for 2 years after receipt of the work. A sensor assembly (Co2, indoor temperature by zone, humidity sensor, etc..) equips the building, with remote management via the internet, and a periodic data to fine-tune the starting

## Renewables & systems

### Systems

Heating system :

- Geothermal heat pump
- Water radiator

Hot water system :

- Individual electric boiler

Cooling system :

- Geothermal heat pump
- Chilled Beam

Ventilation system :

- Double flow heat exchanger

Renewable systems :

- Solar photovoltaic
- Heat Pump on geothermal probes

Renewable energy production : 91,00 %

### Smart Building

BMS :

Implementation of a BMS controlling all building energy equipment: Instrumentation PREBAT

## Environment

### Urban environment

Land plot area : 21 696,00 m<sup>2</sup>

Built-up area : 800,00 %

Green space : 780,00

The project is located on the influence of the old station, near the city center.  
The site includes a large land reserve.

## Products

### Product

Pisa prefabricated wall

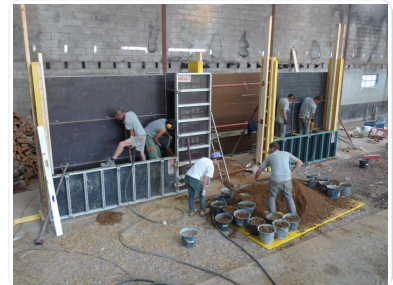
Entreprise Gargano

M. Joseph Gargano (contact@josephgargano.com)

<http://www.josephgargano.com>

Product category : Gros œuvre / Structure, maçonnerie, façade

Prefabrication shop a few miles from the site of 16 modules walls 45cm thick and 3m high, ranging from 1T to 8T. The total volume of earth Pisa is 160m<sup>3</sup>. These modules were transported on site and used a crane to form a partition wall holder is inside the heated volume, thus increasing the inertia of the building (also entirely in wood frame). The technique of Pisa, used for millennia in construction, is extremely efficient in terms of gray energy, management hygrometry, and its plastic appearance. The Pisa possesses, as it is of being 'PIECE correctly, the qualities of mechanical resistance sufficient to be carrying on several levels. The cost for this project is approximately 650 ' / m<sup>2</sup>



The building owner and the company, were particularly involved in the set 'practice of this technique, including technical difficulties due to a lag in timing the realization of the work. This requires the company prefabricated modules workshop to overcome the weather conditions, instead of asking the walls in place as originally planned.

## Costs

### Construction and exploitation costs

Renewable energy systems cost : 150 000,00 €

### Energy bill

Forecasted energy bill/year : 1 512,00 €

## Carbon

### GHG emissions

GHG in use : 1,00 KgCO<sub>2</sub>/m<sup>2</sup>/an

Methodology used :

RT 2005

Building lifetime : 50,00 année(s)

### Life Cycle Analysis

Material impact on GHG emissions :

-121

Material impact on energy consumption : 299,00 kWhEP

## Contest



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