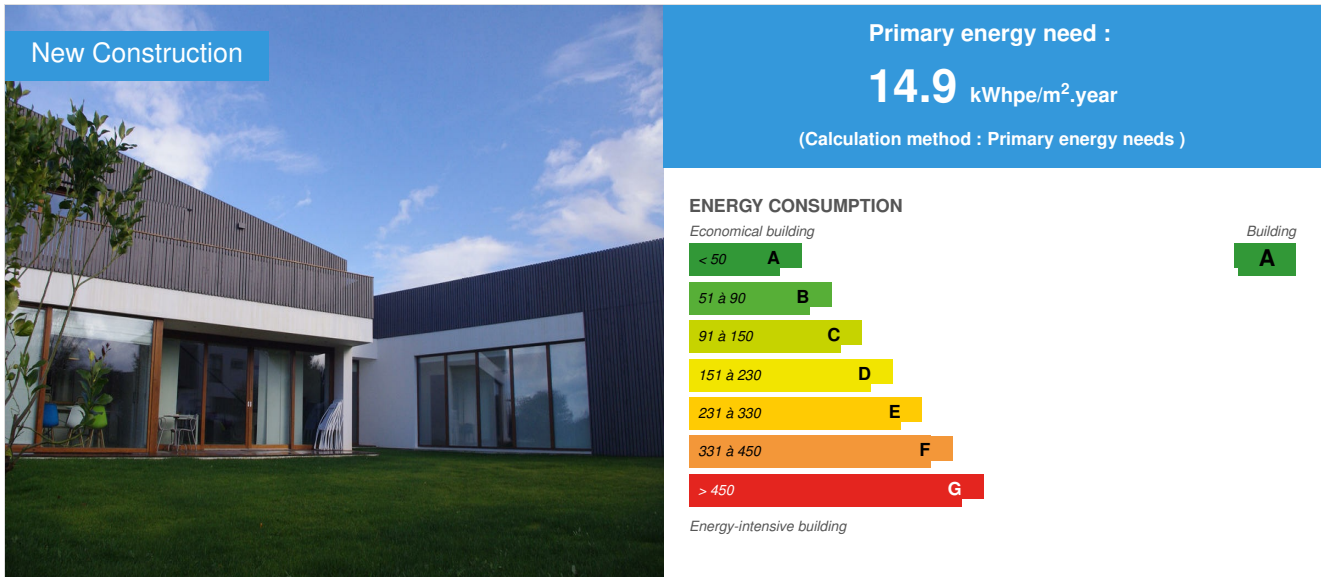


## House in Muros. Certified Passivhaus.

by Amaya Salinas de León / 2016-06-03 11:39:59 / España / 13074 / ES



### General information

Detached house situated in Muros del Nalon that integrates both the concepts of the Passivhaus standard energy efficiency and bioclimatic architecture. This way the building guarantees an almost zero energy consumption. The housing is formed by two different volumes, which are arranged according to different orientations, the prevailing winds and views, and are adapted to the shape of the plot and alignments marked by urban planning. The north facade is almost blind, avoiding energy losses. South façade has large windows in the living room, kitchen and master bedroom, promoting solar gains in winter. In summer the house is protected by shadings and temporary protections. As for the materials used, the architecture of the fishing villages of the Asturian western coast, are formed by volumes of different colors and wooden galleries. These two materials are reinterpreted and are used to coat the housing: the volumes where the rooms are located are coated externally with continuous Siberian Larch wood both façade and roof. These wooden pieces are based on a white pedestal in which day and access areas are located.

## See more details about this project

<http://www.amayasalinas.com>

## Data reliability

3rd part certified

## Stakeholders

### Stakeholders

Function : Designer

Amaya Salinas de León Arquitecta

<http://www.amayasalinas.com>

Writing Project and Passivhaus calculations

Function : Contractor

TimberOnLive s.l.

<http://www.timberonlive.com>

Construction company

Function : Certification company

Energiehaus s.l.

<http://www.energiehaus.es>

Passivhaus Certificate

## Contracting method

Lump-sum turnkey

## Owner approach of sustainability

Detached house situated in Muros del Nalon that integrates both the concepts of the Passivhaus standard energy efficiency and bioclimatic architecture. This way the building guarantees an almost zero energy consumption. The house is projected according to the criteria of the standard Passivhaus, in a way that energy consumption is adapted to the unique operation of housing. This way, the two volumes, can operate independently and have an energy consumption depending on the different degrees of occupancy of the house.

## Architectural description

The housing is formed by two different volumes, which are arranged according to different orientations, the prevailing winds and views, and are adapted to the shape of the plot and alignments marked by urban planning. The north facade is almost blind, avoiding energy losses. South façade has large windows in the living room, kitchen and master bedroom, promoting solar gains in winter. In summer the house is protected by shadings and temporary protections.

## Energy

### Energy consumption

Primary energy need : 14,90 kWhpe/m<sup>2</sup>.year

Primary energy need for standard building : 99,00 kWhpe/m<sup>2</sup>.year

Calculation method : Primary energy needs

CEEB : 0.0701

### Envelope performance

Envelope U-Value : 0,18 W.m<sup>-2</sup>.K<sup>-1</sup>

More information :

Larch ventilated exterior wall: 0.176 w / mk

Larch ventilated cover : 0.193 w / mk

Flat roof: 0.116 w / mk

Foundation slab: 0.181 w / mk

Indicator : EN 13829 - n50 » (en 1/h-1)

Air Tightness Value : 0,46

## Real final energy consumption

Real final energy consumption/m<sup>2</sup> : 99,00 kWhfe/m<sup>2</sup>.year

## Renewables & systems

### Systems

Heating system :

- Wood boiler

Hot water system :

- Heat pump

Cooling system :

- No cooling system

Ventilation system :

- Natural ventilation
- Nocturnal ventilation
- Free-cooling
- Double flow heat exchanger

Renewable systems :

- Biomass boiler
- Heat pump

## Environment

### GHG emissions

GHG in use : 25,90 KgCO<sub>2</sub>/m<sup>2</sup>/year

Methodology used :

PHPP 8.4

Building lifetime : 50,00 year(s)

### Indoor Air quality

The house is equipped with a mechanical ventilation system controlled double-flow ventilation (balanced passive house). The heat exchanger installed is the Siber DF4 Excellent model, certified by the Passivhaus Institute with a yield of 84% and a maximum ventilation capacity of 400 m<sup>3</sup> / h. The nominal performance of this system, taking into account losses in the ducts between the heat recovery device and the thermal envelope is 83%. Outside air ducts (input and output) are isolated and out to facade. The heat exchanger, is placed in the utility room on the ground floor, outside the thermal envelope. The supply and exhaust pipes run both ground floor and first floor by the wrought facilities coffin is insulated with rock wool 12 cm thick. of thickness. Air supply grilles are placed directly on the floor and are located in the living room and bedrooms, and extraction grilles are placed on the walls to 30cm from the ceiling in the bathrooms and kitchen.

### Comfort

**Health & comfort :** Thanks to proper insulation, airtightness and mechanical ventilation double flow own homes certified Passivhaus great interior comfort and low CO<sub>2</sub> concentration is achieved inside.

## Products

### Product

Recuperador de calor Siber DF Excellent

Siberzone s.l.

siber@siberzone.es

<http://www.siberzone.es>

Product category :

Heat recovery certified by the Passivhaus Institut.

Good performance.



Heavy System Network TimberonLive

TimberOnLive

info@timberonlive.com

<http://www.timberonlive.com>

Product category :

System of heavy wooden framework. Sealing line on the outside. Ventilated façade and roof finished in Siberian larch.

Good performance.



## Costs

### Construction and exploitation costs

Cost of studies : 3 000 €

Total cost of the building : 184 117 €

### Energy bill

Forecasted energy bill/year : 200,00 €

Real energy cost/m<sup>2</sup> : 1

Real energy cost/Dwelling : 200

## Urban environment

The house is located on a plot of 1000.00 m<sup>2</sup>, in Muros de Nalon (Asturias), at an altitude of 127.00 m. and 1000 m. away from the Cantabrian Sea. The climate of the coastal area of Asturias is characterized as mild-tempered, with abundant rainfall throughout the year and mild temperatures in both winter and summer. The average winter temperature is 9 ° C-10 ° C and 18 ° C-19 ° C in summer .

### Land plot area

Land plot area : 1 000,00 m<sup>2</sup>

### Built-up area

Built-up area : 20,00 %

### Green space

Green space : 800,00

## Building Environmental Quality

- indoor air quality and health
- acoustics
- comfort (visual, olfactive, thermal)
- energy efficiency
- maintenance
- building process
- products and materials

## Contest

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

Minimización del consumo de energía:

- Demanda de calefacción inferior a 15 kwh/m2

Energías renovables para satisfacer la demanda de calefacción y ACS:

- Estufa de pellets

- Aerotermo

Uso de materiales y sistemas constructivos de bajo impacto ambiental.

- Uso de madera proveniente de bosques sostenibles

- Carpinterías de madera autóctona

Uso de recursos propios

- Aprovechamiento del agua del subsuelo para riego y ducha exterior.

Plazo de construcción reducido

- La vivienda se construyó en cuatro meses y medio

Certificación Passivhaus

La vivienda está certificada por el PassivHaus Institut.

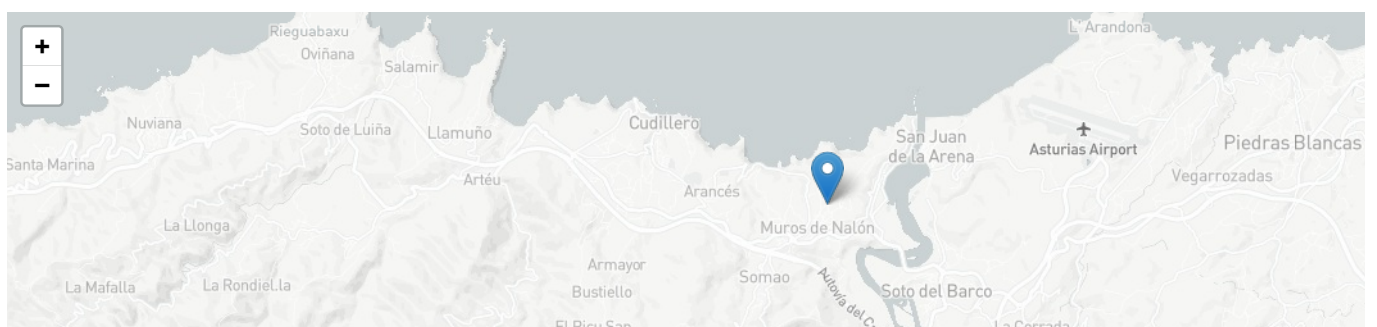
### Building candidate in the category



Energía y Climas Templados



Premio de los usuarios





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