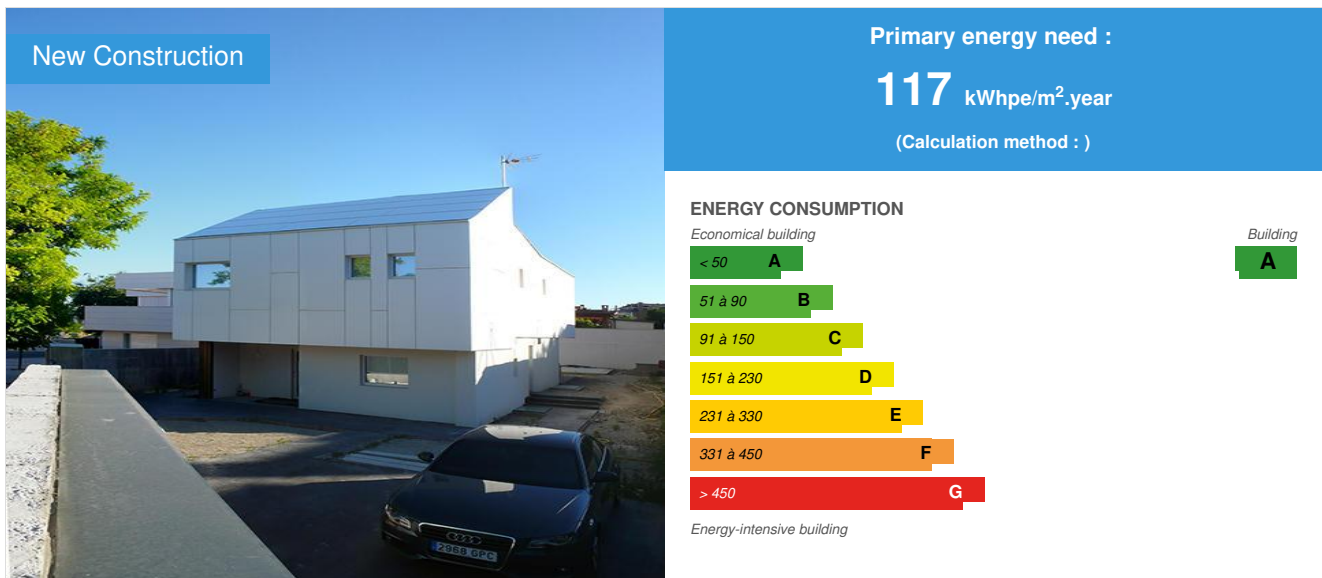


## RIVAS DETACHED PASSIVHAUS

by Elena Castillo Viguri / 2016-07-01 14:26:22 / Espagne / 12121 / ES



**Building Type** : Isolated or semi-detached house  
**Construction Year** : 2014  
**Delivery year** : 2016  
**Address 1 - street** : 28521 RIVAS VACIAMADRID, España  
**Climate zone** : [Csa] Interior Mediterranean - Mild with dry, hot summer.

**Net Floor Area** : 250 m<sup>2</sup>  
**Construction/refurbishment cost** : 1 300 €  
**Number of Dwelling** : 1 Dwelling  
**Cost/m<sup>2</sup>** : 5.2 €/m<sup>2</sup>

**Certifications :**



**Proposed by :**



### General information

Detached house in private development. It is a mixed construction of in situ concrete / industrial light wooden panel framework.

The house is located in a residential area of low density in Rivas Vaciamadrid, a town southeast of Madrid and is the second home with a Passivhaus certificate in this autonomous community.

The climate is mild in winters and hot during summer. There is a very high annual temperature swing, which has been one of the great challenges of this project.

Previous climate studies in the area warned us of summer overheating, which has been a determining factor in the development of the project.

The house has two floors above ground. Downstairs for a more public use and a first floor for private use. And one floor below ground level that has multipurpose

spaces. All within the thermal envelope.

The first floor serves as a superimposed body on the ground that protects it from the sun. The ground floor and first floors are connected by a double-height space located in the heart of the house.

Passive strategies capable of combining a good energy operation with the design assumptions were as follows:

- A disposition that groups together in the north side the service zones with small holes, and locate the main rooms in the south zones.
- Protections by overhangs all the holes facing south / west, dimensioned by their orientation.
- A provision of holes of varying heights and facing in the direction of the prevailing wind component area favoring cross-ventilation for night cooling during the warmer months
- A basement within the thermal envelope that gives thermal inertia to a lightweight construction and to acts thermal regulator
- An envelope ventilated facades and roofs that shades the envelopes
- Light colors predominate in the finished envelope

A big effort has been made to combine the design parameters consistent with the requirements of users and the Passivhaus Standard, which has been one of the biggest lessons learned from the project.

## See more details about this project

<http://www.idealista.com/news/inmobiliario/vivienda/2015/07/15/738415-coffee-break-como-se-disena-construye-y-se-vive-en-una-casa-pasiva>

<http://www.plataforma-pep.org/estandar/ejemplos-ph/19>

[http://www.passivhausprojekte.de/index.php?lang=en#d\\_4483](http://www.passivhausprojekte.de/index.php?lang=en#d_4483)

## Data reliability

Self-declared

## Stakeholders

### Stakeholders

Function : Designer

DAVID MARSINYACH ROS

BUILDING DESIGN

Function : Other consultancy agency

ELENA CASTILLO VIGURI

+34 619 35 70 15

BIOCLIMATIC DESIGN, CONSTRUCTION SYSTEM AND CERTIFICATION PASSIVHAUS

Function : Construction company

JESUÓ SOTO (ALTERTECHNICA)

DESIGN AND IMPLEMENTATION OF FACILITIES

Function : Structures calculist

DAVID SERRANO

DESIGN AND CALCULATION OF THE STRUCTURE

Function : Contractor

FRANCISCO PASCUAL

CONSTRUCTOR

## Contracting method

General Contractor

## Owner approach of sustainability

INDUSTRIALIZED HOUSING WITH LOW ENERGY CONSUMPTION

## Architectural description

Detached house in private development. It is a mixed construction of in situ concrete / industrial light wooden panel framework. The house is located in a residential area of low density in Rivas Vaciamadrid, a town southeast of Madrid and is the second home with a Passivhaus certificate in this autonomous community. The climate is mild in winters and hot during summer. There is a very high annual temperature swing, which has been one of the great challenges of this project. Previous climate studies in the area warned us of summer overheating, which has been a determining factor in the development of the project. The house has two floors above ground. Downstairs for a more public use and a first floor for private use. And one floor below ground level that has multipurpose spaces. All within the thermal envelope. The first floor serves as a superimposed body on the ground that protects it from the sun. The ground floor and first floors are connected by a double-height space located in the heart of the house. Passive strategies capable of combining a good energy operation with the design assumptions were as follows: - A disposition that groups together in the north side the service zones with small holes, and locate the main rooms in the south zones. - Protections by overhangs all the holes facing south / west, dimensioned by their orientation. - A provision of holes of varying heights and facing in the direction of the prevailing wind component area favoring cross-ventilation for night cooling during the warmer months - A basement within the thermal envelope that gives thermal inertia to a lightweight construction and to acts thermal regulator - An envelope ventilated facades and roofs that shades the envelopes - Light colors predominate in the finished envelope A big effort has been made to combine the design parameters consistent with the requirements of users and the Passivhaus Standard, which has been one of the biggest lessons learned from the project.

## Energy

### Energy consumption

Primary energy need : 117,00 kWhpe/m<sup>2</sup>.year

Primary energy need for standard building : 270,00 kWhpe/m<sup>2</sup>.year

Calculation method :

CEEB : 0.1177

Final Energy : 117,00 kWhfe/m<sup>2</sup>.year

Breakdown for energy consumption :

HEATING DEMAND 14 kWh PE / m<sup>2</sup> / year

DEMAND REFRIGERATION 8 kWh PE / m<sup>2</sup> / year

ACS, AUXILIARY ELECTRICITY 69 kWh PE / m<sup>2</sup> / year

LIGHTING, ELECTRICAL 26 kWh PE / m<sup>2</sup> / year

### Envelope performance

Envelope U-Value : 0,12 W.m<sup>-2</sup>.K<sup>-1</sup>

More information :

FACADES 0.145

COVERS 0.124

DECK 0.395

WINDOWS 0.96

Indicator :

Air Tightness Value : 0,59

### Real final energy consumption

Real final energy consumption/m<sup>2</sup> : 117,00 kWhfe/m<sup>2</sup>.year

Real final energy consumption/functional unit : 117,00 kWhfe/m<sup>2</sup>.year

Year of the real energy consumption : 2 016

## Renewables & systems

### Systems

Heating system :

- No heating system

Hot water system :

- Other hot water system

Cooling system :

- Reversible heat pump

HEAT RECOVERY GREYWATER

Solutions enhancing nature free gains :  
NATURAL LIGHTING, SOLAR GAIN, cross ventilation

## Environment

### Indoor Air quality

PERMANENT RENEWAL OF AIR WITHOUT LOSING POWER. CARBON FILTERS + F7.

### Comfort

**Health & comfort :** NATURAL LIGHTING IN ALL AREAS. THERMAL UNIFORMITY IN ALL THE ENVELOPE. STABLE COMFORT TEMPERATURE OF 20° IN WINTER, 25° IN SUMMER

**Calculated thermal comfort :** HOMOGENEIDAD TÉRMICA EN TODA LA ENVOLVENTE 17°. TEMPERATURA ESTABLE DE CONFORT 20° INVIERNO, 25° VERANO

## Products

### Product

MECHANICS heat recovery ventilation

ZEHNDER

34 902 111 309

<http://www.zehnder.es/>

Product category :

SYSTEM heat recovery ventilation

RECUPERATOR yielding 84%



ZEHNDER ARTIC 550

ZEHNDER

34 902 111 309

<http://www.zehnder.es/>

Product category :

HEAT PUMP

HEAT PUMP COOLING LINE FOR AIR VENT



Inside KALHIDRA

KALHIDRA

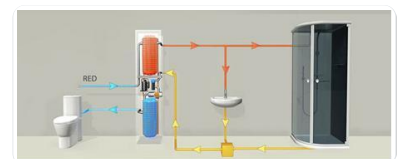
info@kalhidra.com

<http://www.kalhidra.com/>

Product category :

HEAT PUMP

HEAT RECOVERY SYSTEM GREY WATER. HEAT PUMP HIDROTERMIA. COP 6.5



CARPINTERÍA VEKA SOFTLINE 82 MD

INRIALSA

inrialsa@inrialsa.com

<http://www.inrialsa.com>

Product category :

PVC WINDOWS

WINDOW FRAME WITH VALUE U 1 W / m<sup>2</sup>K WITH STRIPPERS AND TRIPLE GLASS WITH WARM AND SOLAR CONTROL



## Costs

## Urban environment

LOW DENSITY RESIDENTIAL AREA

## Land plot area

Land plot area : 500,00 m<sup>2</sup>

## Built-up area

Built-up area : 311,00 %

## Parking spaces

1 SQUARE IN PLOT

## Building Environmental Quality

### Building Environmental Quality

- indoor air quality and health
- acoustics
- comfort (visual, olfactive, thermal)
- water management
- energy efficiency

## Contest

### Building candidate in the category

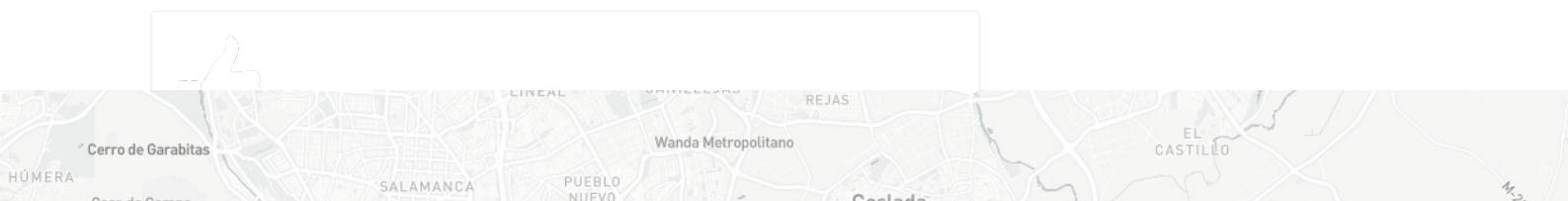


Energía y Climas Templados



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