RIVAS DETACHED PASSIVHAUS

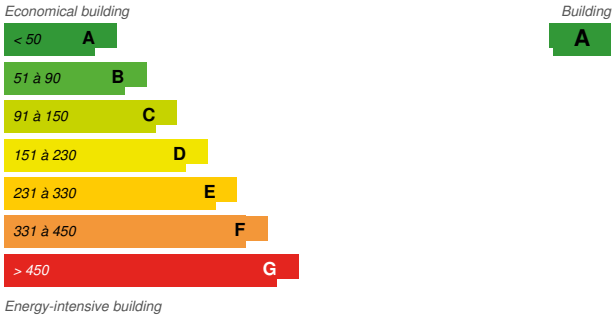
by Elena Castillo Viguri / 2016-07-01 14:26:22 / España / 12018 / ES

Primary energy need :

117 kWhpe/m^2.year

(Calculation method : RT 2012)

ENERGY CONSUMPTION



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^2 Other
Construction/refurbishment cost : 1 300 €
Number of Dwelling : 1 Dwelling
Cost/m2 : 5.2 €/m^2

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 Passivahus 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 fr om 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

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 :

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 Passivahus 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^2.year

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

Calculation method : RT 2012

CEEB : 0.1177

Final Energy : 117,00 kWhfe/m^2.year

Breakdown for energy consumption :
HEATING DEMAND 14 kWh PE / m2 / year
DEMAND REFRIGERATION 8 kwh PE / m2 / year
ACS, AUXILIARY ELECTRICITY 69 kWh PE / m2 / year
LIGHTING, ELECTRICAL 26 kWh PE / m2 / year

Envelope performance

Envelope U-Value : 0,12 $W.m^{-2}.K^{-1}$

More information :
FACADES 0.145
COVERS 0.124
DECK 0.395
WINDOWS 0.96

Indicator : n50

Air Tightness Value : 0,59

Real final energy consumption

Real final energy consumption/m2 : 117,00 kWhfe/m^2.year

Real final energy consumption/functional unit : 117,00 kWhfe/m^2.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 LIGHTNING, 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 20º IN WINTER, 25º IN SUMMER

Calculated thermal comfort : HOMOGENEIDAD TÉRMICA EN TODA LA ENVOLVENTE 17º. TEMEPERATURA ESTABLE DE CONFORT 20º INVIERNO, 25º 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

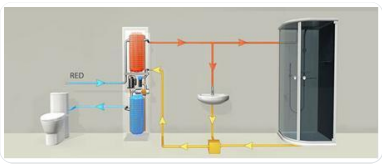
info@kalhidra.com

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 / m2K 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^2

Built-up area

Built-up area : 311,00 %

Parking spaces

1 SQUARE IN PLOT

Building Environnemental Quality

Building Environmental Quality

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

Contest

Reasons for participating in the competition(s)

+ Vivienda unifamiliar aislada de construcción de panel industrializado ligero de entramado de madera.
+ Segunda vivienda certificada según el Estándar Passivhaus en la Comunidad de Madrid.
+ Vivienda que introduce el parámetro de la energía en las variables esenciales de diseño combinando estrategias bioclimáticas con un proceso de construcción extraordinariamente cuidado para reducir al máximo la demanda energética y conseguir el máximo confort interior.

Building candidate in the category

Energía y Climas Templados

Green Building Solutions Awards 2016

Premio de los usuarios

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