RIVAS DETACHED PASSIVHAUS

New Construction

Primary energy need:
117 kWhpe/m².year
(Calculation method: RT 2012)

ENERGY CONSUMPTION

Economical building

<table>
<thead>
<tr>
<th>Energy-intensive building</th>
<th>Building Type: Isolated or semi-detached house</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 50</td>
<td>A</td>
</tr>
<tr>
<td>51 à 90</td>
<td>B</td>
</tr>
<tr>
<td>91 à 150</td>
<td>C</td>
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<tr>
<td>151 à 250</td>
<td>D</td>
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<tr>
<td>231 à 350</td>
<td>E</td>
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<tr>
<td>331 à 450</td>
<td>F</td>
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<tr>
<td>&gt; 450</td>
<td>G</td>
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</tbody>
</table>

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

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.plataforma-pep.org/estandar/ejemplos-phi/19

Data reliability

Self-declared

Stakeholders

DAVID MARSINYACH ROS
BUILDING DESIGN

ELENA CASTILLO VIGURI
+34 619 35 70 15
BIOCCLIMATIC DESIGN, CONSTRUCTION SYSTEM AND CERTIFICATION PASSIVHAUS

JESUÓ SOTO (ALTERTECHNICA)
DESIGN AND IMPLEMENTATION OF FACILITIES

DAVID SERRANO
DESIGN AND CALCULATION OF THE STRUCTURE

FRANCISCO PASCUAL
CONSTRUCTOR

Contracting method

General Contractor

INDUSTRIALIZED HOUSING WITH LOW ENERGY CONSUMPTION
Architectural description

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Energy

Energy consumption

Primary energy need : 117,00 kWhpe/m².year
Primary energy need for standard building : 270,00 kWhpe/m².year
Calculation method : RT 2012
CEEB : 0.1177
Final Energy : 117,00 kWh/m².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 kWh/m².year
Real final energy consumption/functional unit : 117,00 kWh/m².year
Year of the real energy consumption : 2016

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. TEMPERATURA ESTABLE DE CONFORT 20º INVIEMORO, 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
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 m²

Built-up area

Built-up area: 311,00 %

Parking spaces

1 SQUARE IN PLOT

Building Environmental Quality

- indoor air quality and health
- acoustics
- comfort (visual, olfactory, 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
Premio de los usuarios