

#29Soto

by Germán Velázquez Arizmendi / ⏰ 2017-06-07 17:58:58 / España / ☎ 13317 / 🇪🇸 ES



New Construction

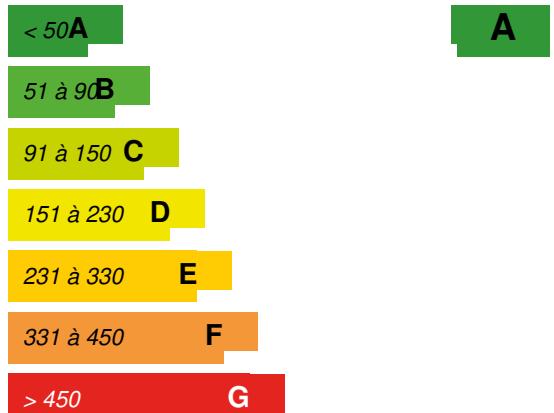
Primary energy need :

5.9 kWhpe/m².year

(Calculation method : RD: 47/2007)

ENERGY CONSUMPTION

Economical building



Energy-intensive building

Building Type : Collective housing > 50m

Construction Year : 2017

Delivery year : 2017

Address 1 - street : Vicente Luis Garcera Lopez 31006 PAMPLONA, España

Climate zone : [Csa] Interior Mediterranean - Mild with dry, hot summer.

Net Floor Area : 2 250 m²

Construction/refurbishment cost : 3 150 356 €

Certifications :



Proposed by :



General information

This is the first block of housing certified in Spain under the Passivhaus standard, and therefore has a demand for heating below 15kWh / m²a, and a heating load of 10W / m². This implies that a floor of 75m² will have a heating load of only 750W, so with a hair dryer there would be enough to heat two houses.

To achieve this the following principles have been applied:

1. Insulation: A continuous thermal envelope is projected on the exterior of the building, which is not interrupted on deck or on the ground floor. Exterior insulation minimizes thermal bridges.
2. Thermal bridges: all the construction details have been modeled with a thermal bridge calculation program, so that it can be guaranteed that at any point inside the building there will be at least 17°C of temperature. The terraces have been disconnected from the interior structure, the slab being cut so that the insulation line can have continuity, and the blinds go outside to avoid sealing problems, and the pre-frame has had to be extended to place a rigid insulation block, so that the facade rock wool has continuity to the carpentry itself.
3. High-performance carpentry and glazing: A set consisting of a high-performance PVC profile with a UfAlta tightness: in all the houses a door-blowing test has been carried out, applying standards en13829 and ISO 9972, and criteria foreseen by the Passivhaus Institut. The average tightness was 0.40 renewals / hour, a figure well below the 0.6r / h required by the Passivhaus Institute for certification.
4. Ventilation with heat recovery: When you have worked exhaustively the sealing makes perfect sense to use a mechanical ventilation of double flow, with recovery of heat of high efficiency. This allows the air to be preheated in winter to 17-18 ° C, so the differential is only 3-4 ° C. With a simple flow would have to raise the temperature of the outdoor air from 0 ° C on a winter day to 21 ° C setpoint.

See more details about this project

- ☒ <https://www.construble.es/2017/06/07/29-soto-primer-edificio-residencial-certificado-passivhaus-espana>
- ☒ <http://www.eitb.eus/es/noticias/sociedad/videos/detalle/4093676/el-primer-bloque-de-pisos-passivhaus-del-estado-estara-en-pamplona/>
- ☒ <http://www.noticiasdenavarra.com/2016/04/24/vecinos/pamplona/el-bloque-de-viviendas->

con-mayor-ahorro-energetico

☞ <https://simaexpo.com/candidatura/29-soto-1er-bloque-residencial-passivhaus-en-espana/>

☞ <https://www.construble.es/2017/06/07/29-soto-primer-edificio-residencial-certificado-passivhaus-espana>

Data reliability

3rd part certified

Stakeholders

Stakeholders

Function : Contractor

Promociones Las Provincias

Laura Valencia

☞ <http://www.promocioneslasprovincias.com/>

Function : Construction Manager

Construcciones Erro y Egui

Iñigo Egui

☞ <http://www.erroyeogui.com/>

Function : Designer

VArquitectos

Germán Velázquez

☞ <http://www.varquitectos.com/>

Contracting method

Lump-sum turnkey

Owner approach of sustainability

The objective was to get the project with the lowest possible heating demand, so as to be able to offer houses without energy mortgage. For this, the Passivhaus standard was proposed, which also offers many other advantages, such as maximum indoor air quality, avoid thermal

bridges and therefore pathologies, maximum interior comfort, absence of noise thanks to high insulation and great air tightness, etc.

Architectural description

The architecture could not be seen in any case mortgaged by the constructive solutions of high energy efficiency. For this, VArquitectos has done an intense work during the drafting of the project in order to be able to provide thermally adequate solutions to the architectural requirements. The most notable case are the large terraces which do not compromise in absolute efficiency of the building, since they are outside the thermal envelope.

If you had to do it again?

Certain solutions implemented on site would be simplified.

Energy

Energy consumption

Primary energy need : 5,90 kWhpe/m².year

Primary energy need for standard building : 24,20 kWhpe/m².year

Calculation method : RD: 47/2007

Final Energy : 26,80 kWhfe/m².year

Breakdown for energy consumption :

Heating 6.60kWh / m²a

ACS 17.76kWh / m²a

Cooling 2.5kWh / m²a

More information :

Demand for heating will be below 15kWh / m²a, as the Passivhaus certification proves.

Envelope performance

Envelope U-Value : 0,17 W.m⁻².K⁻¹

More information :

The façade is composed of exterior to interior:

Ventilated composite aluminum facade

Thermal insulation of double density rock wool in 10cm

Waterproof coating

Half massive brick flagpole

Cast

Mineral wool 5cm
Cardboard plaster partition

Building Compactness Coefficient : 0,34
Indicator : EN 13829 - n50 » (en 1/h-1)
Air Tightness Value : 0,40

Renewables & systems

Systems

Heating system :

- Condensing gas boiler
- Low temperature floor heating

Hot water system :

- Condensing gas boiler

Cooling system :

- No cooling system

Ventilation system :

- Nocturnal ventilation
- Double flow heat exchanger

☒ La Ventilación de doble flujo con recuperación de calor cuenta con una distribución en estrella. De este modo, el calibrado de la instalación es más sencillo, y se garantiza la ausencia de ruidos por transmisión a través de los conductos.

Renewable systems :

- Solar Thermal

Renewable energy production : 30,00 %

Other information on HVAC :

A radiant floor is provided for the heating. The system is oversized for existing requirements, but it did not seem feasible to market a product without heating.

Solutions enhancing nature free gains :

The project has been completely modeled with the PHPP, the computer tool of the Passivhaus Institute. This has allowed to contemplate absolutely all the thermal gains, be they natural or internal gains, as well as the losses. For that

Environment

GHG emissions

GHG in use : 5,60 KgCO₂/m²/year

Methodology used :

CTE

Building lifetime : 75,00 year(s)

Indoor Air quality

The quality of the indoor air is guaranteed through the double flow with heat recovery. The ppms will be stable between 500ppms and 1000ppms. When air is filtered, there will be no pollen, dust, pollution, etc.

Comfort

Health & comfort : In the absence of thermal bridges and gradients, and with the correct ventilation provided, no internal condensation will occur, avoiding the appearance of pathologies, mold, etc. The comfort will therefore be maximum, with a stable temperature of 21°C, with a minimum expenditure on heating. In addition the absence of noises will be almost total thanks to the tightness of the houses and their high isolation.

Products

Product

Zehnder Comfoair

Zehnder

Koldo Montreal

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

Product category :

Mechanical system of double flow with recovery of heat. A recuperator has been placed per housing unit, with a star distribution.



The houses are not yet in use, but on the pilot floor, customers are very surprised by the absence of smells, noises, etc.

Costs

Construction and exploitation costs

Reference global cost : 2 800,00 €

Renewable energy systems cost : 45 000,00 €

Reference global cost/Dwelling : 2800

Cost of studies : 100 000 €

Total cost of the building : 3 150 356 €

Energy bill

Forecasted energy bill/year : 5 600,00 €

Real energy cost/m² : 2.49

Real energy cost/Dwelling : 193.1

Urban environment

Soto de Lezkairu is a neighborhood recently created in Pamplona. It is currently closed in more than 50%, and has all the services of a new neighborhood; Transport, bicycle lane, recreation areas and parks, pneumatic garbage collection, etc.

Land plot area

Land plot area : 1 150,00 m²

Built-up area

Built-up area : 45,00 %

Green space

Green space : 180,00

Parking spaces

Two basement floors, with space for 44 parking spaces, 29 storage rooms and 4 places for motorcycle.

Building Environmental Quality

Building Environmental Quality

- indoor air quality and health
- acoustics
- comfort (visual, olfactory, thermal)
- energy efficiency
- building process

Contest

Reasons for participating in the competition(s)

-Elementos innovadores, sostenibilidad y eficiencia. Se trata del primer bloque residencial certificado por el estándar Passivhaus. Esto implica utilizar herramientas informáticas para su modelización, eliminación de puentes térmicos, etc. De esta manera se puede definir el grosor preciso de los aislamientos, trabajar la inercia térmica para un óptimo funcionamiento en verano, eliminar los puentes térmicos comprobando todas las secciones con herramientas informáticas, optimizar el balance energético anual de carpinterías y triples acristalamientos, y una vez se trabaje la hermeticidad hasta valores no alcanzados hasta la fecha en edificación en bloque, trabajar la recuperación de calor de alta eficiencia.

-Cumplimiento normativo. No ha sido fácil combinar las más altas exigencias en cuanto a eficiencia, con el cumplimiento de la normativa Española, el CTE, pero ha sido posible tras un duro trabajo de todo el equipo.

-Potencial de mejora. Cuenta con una Calificación energética A (se adjunta), y sobre el edificio de referencia de cumplimiento de CTE, que contaría con una calificación B, baja de 60kWh/m²a hasta los 14,7kWh/m²a.

-Ahorro para el usuario. Con esta demanda de calefacción, una vivienda de 85m² necesitará 1.249kWh/año, suponiendo un COP de 1, y un precio de 0,10€kWh, serían 124,9€ al año en calefacción, frente a los 5.100kWh/año del edificio de referencia, con 510€ al año. Esto supone un ahorro real del 75%.

-Mejora en el confort. Adicionalmente las condiciones de confort interior son mucho mejores, sin gradientes térmicos, con máxima calidad del aire interior y que gracias a los filtros estarán libres de polvo, polen, etc. además de una total ausencia de ruidos exteriores.

-Justificación de la calidad. El que esté certificado por el Passivhaus Institute otorga toda la solvencia necesaria, puesto que es un proceso realmente exigente, en el que se verifican absolutamente todas las cuestiones del proyecto, así como de la ejecución de la obra.

-Repercusión mediática. El proyecto está teniendo una repercusión mediática importante, con varias publicaciones en medios nacionales e internacionales, apariciones en TV, prensa, y se ha expuesto en la reciente 8^a Conferencia Española Passivhaus, o en el reciente III Congreso Intenacional CICSE en Sevilla entre otros. Recientemente ha sido galardonado con el 1er Premio en Asprima-Sima 2017.

-Sencillez y durabilidad. El reto ha consistido en hacer un edificio Passivhaus con técnicas de construcción tradicionales sin que suponga un sobrecosto. Para poder certificarlo, todas las medidas aplicadas tienen que tener garantizada su durabilidad en el tiempo, y en todo caso se han implementado medidas libres de mantenimiento, primando las medidas pasivas sobre las activas. Sin duda, la energía más barata y limpia es la que no se consume, y esta es la máxima aplicada en este proyecto.

-Estrategias diferenciales comercialización. Para la venta de estas viviendas ha sido precisa una formación específica del departamento comercial, y el desarrollo de presentaciones en Powerpoint con el desarrollo de los trabajos para que el cliente pudiera entender la singularidad y ventajas del producto.

-Diseño. No se ha renunciado a un diseño innovador con unas amplias terrazas de casi 20m² en todas las viviendas. Para ello ha habido que diseñar muy bien la envolvente así como los puentes térmicos, para lograr el diseño deseado con la máxima eficiencia energética.

Building candidate in the category



Energía & Climas Temperados





Premio de los Usuarios



Gran Premio de Construcción Sostenible

Date Export : 20230318195133