Family house in Tossa de Mar

by Oliver Style / 2016-06-29 12:36:28 / España / 4643 / ES

Primary energy need :

29.3 kWhpe/m^2.year

(Calculation method : Primary energy needs)

ENERGY CONSUMPTION

Economical building — *Building*

< 50	A	A
51 à 90	B	
91 à 150	C	
151 à 230	D	
231 à 330	E	
331 à 450	F	
> 450	G	

Energy-intensive building

Building Type : Isolated or semi-detached house
Construction Year : 2014
Delivery year : 2015
Address 1 - street : C/ Júpiter 186 17320 TOSSA DE MAR, España
Climate zone : [Csa] Interior Mediterranean - Mild with dry, hot summer.

Net Floor Area : 144 m^2 Superficie útil
Construction/refurbishment cost : 170 438 €
Cost/m2 : 1183.6 €/m^2

Proposed by :

PROGETIC

General information

This Detached house is located on a plot of 628 m2, where the demolition of the existing building, built in 1970 was made, but keeping the pool of 34 m2, built in 2012. It is south facing with large windows in the facade to ensure natural light and solar gain. It has adjustable louver shutters and pergola on the south side, to prevent overheating in summer.

The house has a garage in the basement, an open-plan area with kitchen, dining and living room with access to the garden, and a toilet, a bedroom and a bathroom, all on the ground floor. On the first floor are four bedrooms and two bathrooms.

We used two different construction systems. The basement has been built with reinforced concrete walls with a system of permanent shuttering XPS insulation. Above it the ground floor and first floor, built with a wood frame, of Finnish red pine stand. The facades have air chamber and insulation between the wooden structure. The southern facade has a stone cladding of the area, while the rest are covered with lime mortar and painted with light colors.

The foundation is a suspended floor, and intermediate floors are unidirectional and are constructed by laminated fir beams. The cover is a water, built with the same type of intermediate slabs, and is finished with tile.

As for the facilities, the housing has an aero-thermal pump heat Rotex HSPU Compact for domestic hot water, and a mechanical ventilation double flow system

with boiler enthalpic heat, which in turn serves to climatize the housing thanks to the battery post-treatment air installed in the system. The battery is fed from the heat pump. Finally there is a fireplace in the living room for the coldest winter days.

See more details about this project

http://www.househabitat.es/proyectos/casa-de-madera-en-girona-tossa/

Data reliability

Assessor

Stakeholders

Stakeholders

Function : Designer

Albert Gasol i Boncompte, Jordi Mestrich i Reina

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Function : Designer

Marçal Bonadona i Berdala

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Progetic

progetic@progetic.com

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Function : Construction Manager

House Habitat

info@househabitat.es

http://www.househabitat.es

Function : Manufacturer

Zehnder Group Ibérica Indoor Climate, S.A.

info.es@zehndergroup.com

http://www.zehnder.es

Function : Others

Rotex-Daikin

marketing@daikin.es

http://www.daikin.es

Contracting method

General Contractor

Owner approach of sustainability

The housing in Tossa de Mar has been designed and built according to the Spanish legislation, fulfilling the CTE and taking into particular consideration the DB-HE. Priority has been given to thermal comfort and to drastically reduce energy demands, thanks to thermal insulation, reduction of thermal bridges and ensuring the sealing, which means that cold spots and currents are minimized. As far as possible, they have chosen materials with a low environmental impact, such as the isolation of recycled cellulose or paints natural pigments, and have sought materials from those closest to the situation of housing areas.

Architectural description

The property consists of 143.70 m2 on two floors. the existing building to allow new construction was demolished, but the pool built in 2012. In terms of design, two different construction systems were combined. First, a structure of reinforced concrete was chosen for the basement walls and floor slab for floors in contact with the ground. On the other hand, a solid wood structure of Finnish red pine was chosen for the facades of ground floor and first floor, beams and slabs of fir wood for housing and intermediate floors.

Energy

Energy consumption

Primary energy need : 29,30 kWhpe/m^2.year

Primary energy need for standard building : 105,00 kWhpe/m^2.year

Calculation method : Primary energy needs

CEEB : 0.0004

Breakdown for energy consumption :

Heating demand: 12,35 kWh / m2 / a Cooling demand: 9.64 kWh / m2 / a

Envelope performance

Envelope U-Value : 0,15 $W.m^{-2}.K^{-1}$

More information :

The top two floors of the building are built with solid wood structure of Finnish red pine, finished with white mortar coating silicate, except the south façade, which is covered with natural stone.

Building facades coated white mortar silicate described below:

Interior >Exterior
-15 mm plasterboard panel
-35 mm -200 mm camera installations recycled cellulose insulation between the wooden structure
- OSB panel 15 mm
-40 mm corkboard
-15 mm white mortar coating silicate

South building facade with natural stone cladding, and a value of U = 0.17 W / m2 K, described below:

Interior > Exterior
-15 mm plasterboard panel
-35 mm camera installations
-150 mm recycled cellulose insulation between the wood frame
-15 mm OSB panel
-100-150 mm natural stone finish

Sloping roof, with a value of U = 1.37 W / m2 K, described below:

Interior > Exterior
-15 mm plasterboard panel
-50 mm recycled cellulose insulation between the wood frame
-22 mm OSB panel
-20 mm forming beams slope
-22 mm waterproof OSB panel in
- Plate and finishing ceramic tiles

The carpenteries are of wood with a Uf = 2 W / m2K value. Safety glasses are double layer 6-10a-44, low-emissive, 10% air - 90% argon, with a thermal transmittance of Ug = 1.60 W / m2K and solar factor 0.70.

Renewables & systems

Systems

Heating system :

- Heat pump

Hot water system :

- Heat pump

Cooling system :

- Fan coil

Ventilation system :
- Natural ventilation
- Nocturnal ventilation
- Free-cooling
- Double flow heat exchanger

Renewable systems :
- Heat pump

Environment

GHG emissions

GHG in use : 7,39 $KgCO_2/m^2$/year

Methodology used :
Energy Certification LIDER CALENER

Building lifetime : 100,00 year(s)

Indoor Air quality

Indoor air quality guaranteed using non-toxic, natural and renewable materials along with a mechanical ventilation system with dual-flow heat recovery that provides fresh outdoor air preheated to 100% by stale exhaust air.

Comfort

Health & comfort : Thermal comfort thanks to the thickness and proper installation of the thermal insulation is achieved, reducing thermal bridges and ensuring a tight, which means that the cold spots and currents are minimized.

Products

Product

Rotex Heat Pump HPSU compact 6kW

Daikin

marketing@daikin.es

http://www.daikin.es

Product category : Climatización / Calefacción, agua caliente

Integrated compact unit that produces domestic hot water by using the energy stored in ambient air.

Operating in line with expectations

Zehnder ComfoAir 350 ERV Luxe

Zehnder Group Ibérica Indoor Climate, S.A.

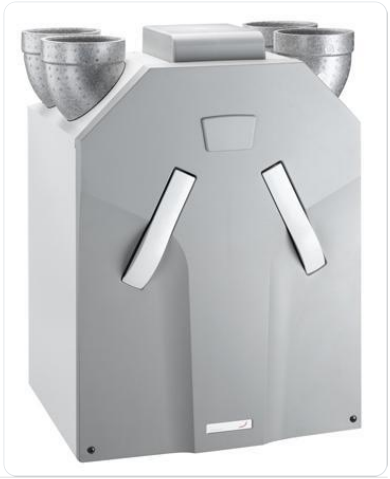
info@zehnder.es

http://www.zehnder.es

Product category : Climatización / Ventilación, refrigeración

Comfort ventilation up to 350 m^3 / h with automatic bypass in summer. Heat recovery and control of indoor humidity. Remote control for weekly time programming.

Operating in line with expectations



Zehnder ComfoPost CW10

Zehnder Group Ibérica Indoor Climate, S.A.

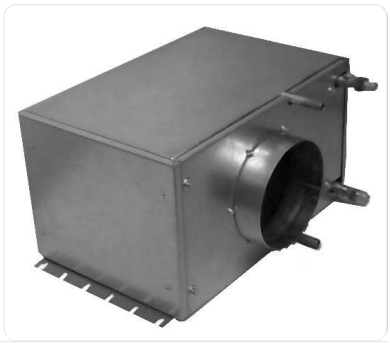
info@zehnder.es

http://www.zehnder.es

Product category : Climatización / Ventilación, refrigeración

Component installed in the ventilation system Heated fresh air that goes into the housing.

Operating in line with expectations



Zehnder ComfoWell

Zehnder Group Ibérica Indoor Climate, S.A.

info@zehnder.es

http://www.zehnder.es

Product category : Climatización / Ventilación, refrigeración

Component installed in the ventilation system that reduces noise generated by the passage of air flowing through the housing.

Operating in line with expectations

Costs

Construction and exploitation costs

Total cost of the building : 329 396 €

Urban environment

The town where the dwelling is located, Tossa de Mar, belongs to the region of La Selva, Girona, and is a coastal town 5623 of inhabitants (2015), located 6 meters above sea level. However, the terrain consists of mountains and hills, on which various developments have been built. On a plot of 628.33 m2, located in one of the aforementioned developments, this house of 143.70 m2 on two floors housing is built. The house has a garage with three parking lots, a kitchen, dining and airy living room, a shower room, three bathrooms and five bedrooms. The ground floor opens to the garden through the south facade and has large windows to maximize natural light. During the demolition of the previous building, it was decided to keep the pool, built in 2012.

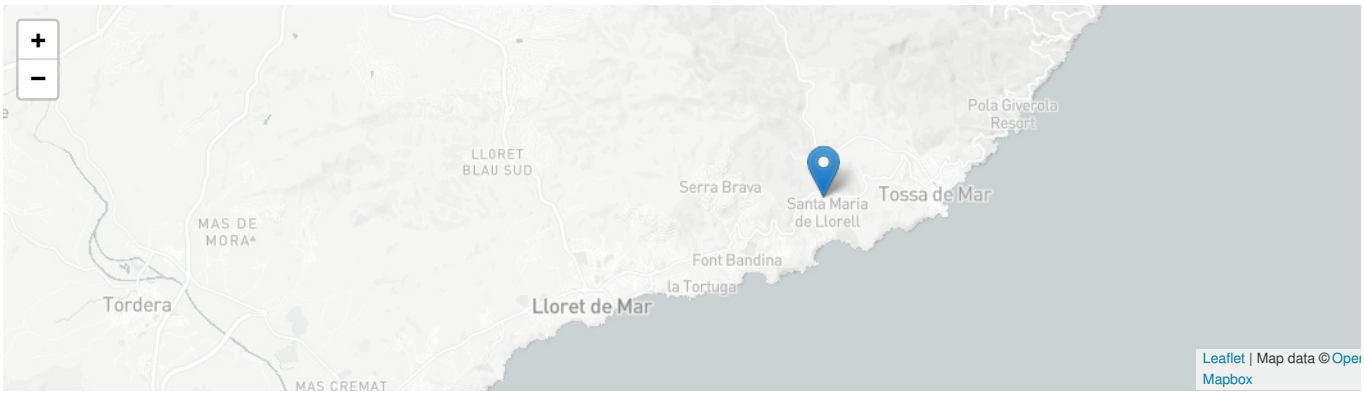
Land plot area

Land plot area : 628,33 m^2

Building Environnemental Quality

Building Environmental Quality

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



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