


## Carrer Nou

by Oliver Style / 2018-06-10 13:37:04 / Spanien / 11346 / ES



**Renovation**

Primary energy need :  
111 kWhpe/m<sup>2</sup>.year  
 (Calculation method : Other )

**ENERGY CONSUMPTION**

*Economical building*

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


*Energy-intensive building*

**Building Type** : Collective housing < 50m  
**Construction Year** : 2017  
**Delivery year** : 2017  
**Address 1 - street** : Carrer Nou, 2 17001 GIRONA, España  
**Climate zone** : [Cfa] Humid Subtropical - Mild with no dry season, hot summer.

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**Net Floor Area** : 678 m<sup>2</sup>  
**Construction/refurbishment cost** : 803 430 €  
**Number of Dwelling** : 5 Dwelling  
**Cost/m2** : 1185 €/m<sup>2</sup>

**Certifications :**



### General information

Carrer Nou: The first multi-family building EnerPHit of Catalunya, located in the historic center of the Girona city. The work began in the summer of 2016 and has ended a year later. The building dates from 1978, the exterior walls are ceramic block finished with mortar to the outside and plastered to the interior. The interior slabs include a layer of terrazzo on unidirectional forging of concrete joists. PIR insulation panels have been installed directly on the inside of the existing wall, followed by a lining for the passage of installations also insulated with mineral wool and finished with plasterboard panels. The airtightness has been achieved by using acoustic membranes on the upper face of the slabs, the PIR taped together in walls and the existing, repaired plastering of the lower face of the slabs. The heating and cooling system consists of radiant panels supported by a battery included in the double flow mechanical ventilation system with heat recovery. Powered by an aerothermal heat pump and controlled by the mini web-server of the home automation control system.

## See more details about this project

<http://progetic.com/es/construccion-sostenible/item/556-consultor%C3%ADa-passivhaus,-rehabilitaci%C3%B3n-plurifamiliar-enerphit,-girona>

## Data reliability

3rd part certified

## Stakeholders

### Contractor

Name : Construccions Busquets Vilobí

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

### Construction Manager

Name : Construccions Busquets Vilobí

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

### Stakeholders

Function : Thermal consultancy agency

PROGETIC Projectes Sostenibles SL

progetic@progetic.com

<http://progetic.com/es/>

Passivhaus Consulting, PHPP, building physics, design and installation domotic control system

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Function : Construction Manager

Construccions Busquets Vilobí SLU

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

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Function : Designer

Jordi Rodríguez-Roda – López-Pedrero-Roda Arquitectes SLP

lpr.arq@coac.es

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

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Function : Developer

MBD Real Estate Group

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

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Function : Construction company

PGI Engineering

<http://www.pgiengineering.com/index.php/es/>

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Function : Certification company

Energiehaus Arquitectos SLP

info@energiehaus.es

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

Performing the Passivhaus audit, issuance of the EnerPHit certificate.

## Owner approach of sustainability

To perform an energy rehabilitation reaching a high level of comfort with a minimum energy consumption.

## Architectural description

- Vertical structure of ceramic loading walls.
- Horizontal roof structure of reinforced concrete half-joists and concrete caissons.

- Facades with continuous coatings.
- Existing openings of important dimension.
- Facing main facade to the south, to the street of 8 meters wide, that is, with minimum solar contributions.
- Action strategy:
- Taking into account that the façade is protected by the Special Plan for the Protection of the Heritage of Girona's old quarter, all the insulation and sealing actions have been done inside with specific technical solutions that have forced to treat air tightness per floor.

## Energy

### Energy consumption

Primary energy need : 111,00 kWhpe/m<sup>2</sup>.year

Primary energy need for standard building : 235,00 kWhpe/m<sup>2</sup>.year

Calculation method : Other

CEEB : 0.0002

Final Energy : 32,00 kWhfe/m<sup>2</sup>.year

Breakdown for energy consumption :

HEATING: 8.9 KWHFE / M2.YEAR

REFRIGERATION: 2,5 KWHFE / M2.YEAR

ACS: 6.4 KWHFE / M2.YEAR

ELECTRICITY: 14.8 KWHFE / M2.YEAR

Initial consumption : 235,00 kWhpe/m<sup>2</sup>.year

### Envelope performance

Envelope U-Value : 0,19 W.m<sup>-2</sup>.K<sup>-1</sup>

More information :

U muros = 0.19 W / m2K

U cubierta = 0.20 W / m2K

U forjado inferior = 0.37 W / m2K

Building Compactness Coefficient : 0,28

Indicator : n50

Air Tightness Value : 1,00

## Renewables & systems

### Systems

Heating system :

- Heat pump
- Others

Hot water system :

- Heat pump
- Solar Thermal

Cooling system :

- Reversible heat pump
- Others

Ventilation system :

- Double flow
- Double flow heat exchanger

Renewable systems :

- Solar Thermal
- Heat pump

Other information on HVAC :

The system consists of an air-water heat pump as production equipment, a fan with heat recovery and post-treatment water battery, and radiant ceiling plates to increase the cooling power of the system and cover the maximum thermal load in summer. The integration of the equipment and the control of the system is carried out with a domotic control unit, temperature and humidity sensors per room, and elements that act on the heat pump, the hydraulic circuits and the fan, giving information at a distance of real behavior of the system, and allowing the adjustment of the operating parameters to optimize its performance. This solution

offers heating and cooling with the same terminal, working almost silently and at low temperature, giving high thermal comfort and good performance working with heat pump.

## Smart Building

### BMS :

A temperature and humidity sensor has been installed in each of the 5 rooms where the radiant plates are located (dining room, kitchen and 3 bedrooms). The temperature and humidity data allow to adjust the water temperature of the plates (acting on the position of the mixing valve) so as not to have condensations, without having to close circuits, thus avoiding start-and-stop cycles of the heat pump, which results in low performance thereof and shortened compressor life.

At the same time, the fan is operated to lower or raise the flow depending on the thermal needs, with a programming (adjustable by the user) that prevents the fan from working in "party mode" during the resting hours. The control allows setting different setpoint temperatures according to schedules or according to occupation, in order to obtain the maximum comfort with the minimum energy consumption.

The ventilation system works automatically with pre-established schedules, with the possibility of manual adjustment according to the occupation level, or the dehumidification needs.

The user can control the air conditioning system and display temperature and humidity data by area, via a tablet fixed to the wall inside the home, or via a mobile phone from anywhere. The application is based on a menu system, quickly configurable and accessible.

## Environment

### GHG emissions

GHG in use : 22,00 KgCO<sub>2</sub>/m<sup>2</sup>/year

Methodology used :

PHPP

### Indoor Air quality

The air quality is guaranteed with the double flow ventilation system with heat recovery, which contains F7 filters at the entrance.

## Products

### Product

ComfoAir Q 600

Zehnder

info.es@zehndergroup.com

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

Product category : HLK / Belüftung, Kühlung

The system of ventilation with recovery of heat of high efficiency is of Zehnder and is composed by a machine of ventilation ComfoAir Q 600 by apartment, silencers ComfoWell, a battery of water ComfoPost and a system of pipes of internal distribution and mouths of impulsion and extraction ComfoTube.

The double flow ventilation system with heat recovery provides indoor air quality and comfort to users. The acceptance of this by the team at work was good.



The Loxone control system

Loxone

info@loxone.es

<https://www.loxone.com/eses/>

Product category :

Domotic control system that allows quick installation, systems are easily expandable for the future and control is simple for users, who access and act on the system from a computer, tablet or mobile phone via Internet.

The Loxone home automation control system allows easy handling of home installations.



## Costs

### Energy bill

Forecasted energy bill/year : 975,00 €

Real energy cost/m2 : 1.44

Real energy cost/Dwelling : 195

## Urban environment

Historic center of the city of Girona.

## Building Environmental Quality

### Building Environmental Quality

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

## Contest

### Reasons for participating in the competition(s)

The building dates from 1978, the exterior walls are ceramic block finished with mortar to the outside and plastered to the interior. The interior slabs include a layer of terrazzo on unidirectional forging of concrete joists. PIR insulation panels have been installed directly on the inside of the existing wall, followed by a lining for the passage of installations also insulated with mineral wool and finished with plasterboard panels. The airtightness has been achieved by using acoustic membranes on the upper face of the slabs, the PIR taped together in walls and the existing, repaired plastering of the lower face of the slabs. The heating and cooling system consists of radiant panels supported by a battery included in the double flow mechanical ventilation system with heat recovery. Powered by an aérothermal heat pump and controlled by the mini web-server of the home automation control system.

### Building candidate in the category



Energía & Climas Temperados



Bajo Carbono



Salud & Comodidad



Edificio Inteligente



Premio de los Usuarios



Gran Premio de Rehabilitación Sostenible

