

## Can Portabella District Casal

by Josep Bunyesc Palaciñ / 2017-06-01 00:00:00 / Espagne / 9346 / ES



Extension + refurbishment

Primary energy need :

**11.9** kWhpe/m<sup>2</sup>.year

(Calculation method : Other )

### ENERGY CONSUMPTION

Economical building

< 50 **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

**A**

**Building Type** : Other building

**Construction Year** : 2015

**Delivery year** : 2015

**Address 1 - street** : 08030 BARCELONA, España

**Climate zone** : [Csb] Coastal Mediterranean - Mild with cool, dry summer.

**Net Floor Area** : 690 m<sup>2</sup> SHON

**Construction/refurbishment cost** : 1 188 335 €

**Number of none** : 13 none

**Cost/m<sup>2</sup>** : 1722.22 €/m<sup>2</sup>

### General information

The idea is to rehabilitate and expand the existing 19 century building in Can Portabella, which hosts social activities in the Sant Andreu district of Barcelona. It is obsolete in terms of facilities, equipment, durability and flexibility of spaces, so its surface is enlarged and the existing part maintaining facades and the first forged are rehabilitated. The criteria for this intervention and improvement are based on the use of materials of low environmental impact and the reduction of resource consumption, for this reason, the building is maintained as much as possible, and the enlarged part is reconstructed with wood structure and natural insulation. Openings are increased for passive solar pickup in winter and solar protections are installed in them. Facilities are minimized with an air-water heat pump climate system for cold and heat. The refurbished building has a ventilation system with heat recovery and by-pass to cool in summer at night. Photovoltaic panels, 40m<sup>2</sup>, are installed on the roof to generate the energy that the building needs to consume throughout the year: this way a building with a demand of about 14kWh / m<sup>2</sup> year is nourished by its solar cover of this energy that needs. In fact, the building consumes less than it generates, so it works as a positive building.

[See more details about this project](http://www.bunyesc.com/)

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

### Data reliability

Self-declared

### Stakeholders

Function : Designer

Josep Bunyesc

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Architect

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Function : Developer

BIMSA Barcelona Infraestructuras Municipales

c/ Bolívia, 105 Barcelona

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

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Function : Construction Manager

IDP INGENIERIA Y ARQUITECTURA IBERIA SL

Av. Francesc Macià, 60, Sabadell, Barcelona

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

### Owner approach of sustainability

All spaces and tours of the center will be accessible. The evacuation routes and the maximum occupancy of spaces for fire safety were re-studied. Areas where noisy activities are carried out are acoustically isolated from aerial and impact noise. Materials of zero or minimum maintenance, with great durability and easy substitution are used. The use of reused-reusable or recycled-recyclable materials that will meet the rest of maintenance and durability requirements will be valued, building solutions should be self-sufficient. Strategies should be proposed to reduce the energy demand in the building more significantly. Consideration should be given to electricity consumption and that the building is expected to reduce total heat demand, be capable of accumulating ACS and have an efficient heating and cooling system. The consumption will be taken into account, and also the material construction of the building. The impact must be computed taking into account the life cycle of the materials.

### Architectural description

The façades of the existing building and the roof floor of the ground floor are preserved, the manual revolts and existing metal joists are exposed as a false ceiling and as protection of the new structural wood slab. This part, with some arch and original foundry pillars, conserves and gives continuity to the original appearance of the building of the industrial era of the late nineteenth century. The part of new structure is constructed with wood, contra-laminated or light framework according to the situation. The original central courtyard is recovered, creating an emptiness in the south part of the second floor that allows the central courtyard to be converted into a skylight with lateral light entrance to maximize the contribution in winter and to limit it with its cantilever in summer. This patio allows the entrance of natural light in the center of the building and a general visual relation that allows to understand the building just when entering. Existing openings are maintained except for the central one on the south façade that is widened to increase the passive solar input in winter. All the openings have their solar control system adjustable on the outside with the adjustable blinds or 'porticones' with the stamped sheet of the rest of the ventilated facade of the enlarged part.

### Building users opinion

Dignification of a space that was very limited and now will have more than 800m<sup>2</sup>, with multipurpose rooms so that the entities of the neighborhood can carry out activities.

## Energy

### Energy consumption

Primary energy need : 11,90 kWhpe/m<sup>2</sup>.year

Primary energy need for standard building : 52,17 kWhpe/m<sup>2</sup>.year

Calculation method : Other

Final Energy : 11,00 kWhfe/m<sup>2</sup>.year

Breakdown for energy consumption :

Air conditioning 5

Ventilation 2

Lighting 4

Initial consumption : 25,00 kWhpe/m<sup>2</sup>.year

## Envelope performance

Envelope U-Value : 0,23 W.m<sup>-2</sup>.K<sup>-1</sup>

Indicator : n50

Air Tightness Value : 1,00

## Real final energy consumption

Real final energy consumption/m2 : 11,00 kWhfe/m<sup>2</sup>.year

Year of the real energy consumption : 2 016

## Renewables & systems

### Systems

Heating system :

- Heat pump

Hot water system :

- Heat pump

Cooling system :

- Reversible heat pump

Ventilation system :

- Natural ventilation
- Nocturnal ventilation
- Double flow heat exchanger

Renewable systems :

- Solar photovoltaic

Renewable energy production : 105,00 %

Solutions enhancing nature free gains :

Openings on the south façade

## Environment

### GHG emissions

Building lifetime : 120,00 year(s)

## Products

### Product

Insulation of recycled cotton

RMT-NITA

RMT ISOLATION S.L. Pol. Ind. Can Magre - c/ Narcis Monturiol - Joan Güell 08187 Santa - Eulàlia de Ronçana - Barcelona Tel: +34 93 844 89 78 Fax: +34 93 844 88 15 e-mail: comercial@rmtsa.es

<http://rmt-nita.es/>

Product category :

The product is used as thermal and acoustic insulation. It is breathable, hygroscopic, recyclable and recycled. Prevents condensation in insulation chambers. It regulates the atmosphere, warm in winter and cool in summer. It is made up of 85% cotton and 15% other fibers. Additives are added to achieve fungicidal and fire retardant properties. It is a product free of toxins and substances that cause allergies.

It is an isolation with which it is easy to work with.



## Costs

### Construction and exploitation costs

Total cost of the building : 1 000 000 €

### Energy bill

Forecasted energy bill/year : 1 375,00 €

Real energy cost/m2 : 1.99

Real energy cost/none : 105.77

## Urban environment

The green area was isolated from the public space by all its limits. On the west side, where the entrance to the building is located, a perimeter fence surrounded the space and only allowed access through a door. On the eastern side, bordering Can Portabella Square, there were walls of work that formerly limited the ownership of the house when this was the house of the master of the industrial area that occupied the space of the current plaza. The proposed urbanization of this space is regarded as the continuation of the Plaza Porta Portabella, eliminating the existing architectural barriers and opening it to public space. To achieve this end, the fence and the walls mentioned above are demolished and continuity is given to the current pavement of the square. The old control house is demolished but its layout is maintained on the pavement of different color, leaving traces of the industrial past of the enclosure. Most trees are preserved, eliminating some shrubs and weeds. The pavement becomes a combination of paving stones and soft beds and adapts to the existing unevenness to facilitate the movement of pedestrians across the square. New urban elements such as furniture or lighting are also incorporated, to make this space, now in disuse, a new place for the neighbors.

### Land plot area

Land plot area : 978,58 m<sup>2</sup>

### Built-up area

Built-up area : 31,00 %

### Green space

Green space : 143,86

## Building Environmental Quality

### Building Environmental Quality

- Building flexibility
- indoor air quality and health
- comfort (visual, olfactive, thermal)
- energy efficiency
- renewable energies

## Contest

### Building candidate in the category



Energía & Climas Templados



Bajo Carbono



Premio de los Usuarios



Gran Premio de Rehabilitación Sostenible

