

# Passivhaus via Napoleone Bonaparte in Putignano

by Piero Russo / ( 2019-06-13 14:43:13 / International / ⊚ 5286 / | EN



Primary energy need:

85 kWhpe/m².year

(Calculation method : Other )

**Building Type**: Collective housing < 50m

Construction Year : 2016 Delivery year : 2018

Address 1 - street : Via Napoleone Bonaparte 17/B PUTIGNANO, Italy Climate zone : [Csa] Interior Mediterranean - Mild with dry, hot summer.

Net Floor Area: 737 m<sup>2</sup>

Construction/refurbishment cost : 930 000 €

Number of Dwelling : 8 Dwelling Cost/m2 : 1261.87 €/m<sup>2</sup>

#### Certifications :



#### General information

### Project:

A low-cost Passivhaus in southern Italy was chosen as a sample project to test a compact solution for heating, cooling, DHW and mechanical ventilation. An integrated design approach made possible a cost-effective building. High performances in thermal insulation, airtightness and thermal bridge reduction allowed us to adopt such a simple, efficient and cost-effective solution.

## Costs and Finance:

This solution has been compared to a complete traditional solution for MEP in the same region (each apartment has heat pump and radiant floor as heating system, ducted air conditioning as cooling system and also MVHR for each apartment. Our MEP solution is 16,3% cheaper. It made possible to achieve a

Passivhaus standard but also an affordable selling price. The apartments are on sale at 1.850,00 euro per sqm, that is exactly the price of all the other apartment in the city for a new construction (even if they are really different for energetic performance and internal comfort).

#### **Compact Unit:**

The compact system consists of a heat pump capable of recovering the extraction airflow heat to transfer it to the renewal airflow and to a DHW tank. In winter conditions, the heat pump is designed in order to partially condensate the refrigerant on the thermal storage tank, so as to dispose the overheating of the refrigerant fluid, and then to complete the condensation on the fresh air flow heat exchanger. The extraction and renewal flows, pass through a recovery heat exchanger with high efficiency, in order to maximize the energy performance of the whole unit. According to the conditioning of the indoor environment, the Compact unit has four modes of operation, automatically managed by the control system, depending on the internal and external conditions of the building: passive heat recovery, active heat recovery, bypass and active cooling.

## Photo credit

Pierangelo Laterza

#### Stakeholders

#### Contractor

Name: Tonik srl

Contact: Pasquale Primavera

## Construction Manager

Name: Pasquale Primavera

#### Stakeholders

Function: Designer
Ing. Arch. Piero Russo
pierorusso@gmail.com

Function: Designer
Ing. Giuseppe Colaci De Vitis
ing.colacidevitis[at]greenkw.it

# Contracting method

Build and sell construction

## Energy

## **Energy consumption**

Primary energy need: 85,00 kWhpe/m².year

Primary energy need for standard building : 100,00 kWhpe/ $m^2$ .year

Calculation method: Other

Breakdown for energy consumption: Annual heating demand 15 kWh /(m2a)

Heating load 12 W/m2

Cooling load 9 W/m2 Cooling and dehumidification demand 13 kWh /(m2a )  $\,$ 

\*calculated according to PHPP

## Envelope performance

Envelope U-Value: 0,15 W.m<sup>-2</sup>.K<sup>-1</sup>

More information : Exterior wall

Clay hollow bricks mm 300; EPS mm 180.

U-value = 0.135 W/(m2K)

Basement floor / floor slab

Concrete mm 100; Hollow slab mm 300; Stone wool insulation mm 120.

U-value = 0.253 W/(m2K)

Roof

Hollow slab mm 300; Stone wool insulation mm 180; Concrete mm 100.

U-value = 0.176 W/(m2K)

Frame

Rehau, Synego

PVC

U w-value = 1.5 W/(m2K)

Glazing

33.1/16/4 b.e. distanziatore super spacer (warm edge)

U g-value = 1.1 W/(m2K)

g -value = 65 %

Building Compactness Coefficient: 0,36 Indicator: EN 13829 - q50 » (en m3/h.m3)

## Renewables & systems

## **Systems**

#### Heating system:

Others

#### Hot water system:

o Other hot water system

#### Cooling system:

Others

#### Ventilation system:

- Free-cooling
- Double flow heat exchanger

#### Renewable systems :

Solar photovoltaic

## Other information on HVAC :

Ventilation

Nilan, Compact P

7 compact system units, HRE 85% plus split systems to cover possible internal gains and peak loads (the last apartment has only HRMV and a split system unit)

Heating installation

compact system

## **Products**

## **Product**

Compact P

Nilan

Product category: Table 'c21\_germany.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '19'

☐ france/data/sources/users/5454/nilancompact-p.pdf

# Construction and exploitation costs

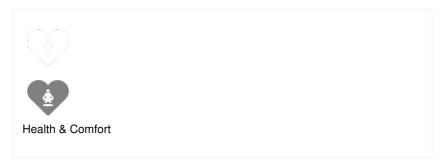
Total cost of the building : 930 000 €

#### Contest

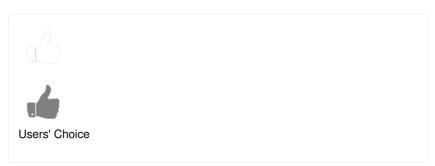
# Reasons for participating in the competition(s)

- Low cost european passive building
- Innovative ventilation system with the compact unit

# **Building candidate in the category**









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