


Passivhaus via Napoleone Bonaparte in Putignano

by Piero Russo / 2019-06-13 14:43:13 / International / 5460 / EN

New Construction



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 m²
Construction/refurbishment cost : 930 000 €
Number of Dwelling : 8 Dwelling
Cost/m² : 1261.87 €/m²

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

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Function : Designer

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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/m².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⁻².K⁻¹

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 :

- 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

<https://www.nilan.dk/en-gb/frontpage/solutions/domestic-solutions/compact-solutions/compact-p>

Product category : Génie climatique, électricité / Ventilation, rafraîchissement

<france/data/sources/users/5454/nilancompact-p.pdf>

Costs

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



Health & Comfort



Users' Choice

