

PASSIVE HOUSE INSTITUTE

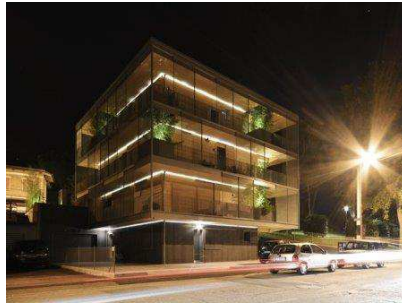
We referred to the Passive House Institute for the validation of the projects.

The evaluation of the projects by the Passive House Institute follows two processes:

- 1) The Passive House Institute evaluates the generic requirements of the projects (Passive House Planning Package) and once they are validated, the projects enter the Passive House Database;
- 2) The Passive House Institute delivers the Passive House certification which is included in the Passive House Database.

In particular, *The Shell PassiveHouse* and *Fiorita PassiveHouse* obtained both the validation of the generic requirements and the certification; *Casa Studio PassiveHouse* instead has obtained the validation of the generic requirements and is undergoing the second phase of certification.

Our projects have been published on the Passive House Database (https://passivehouse-database.org/index.php#k_piraccini).



ID: 4086

General Information

Certified building - Passivhaus Neubau

Passive House Day Participation
'15

Building type

Geschosswohnungsbau

Location

I - 47521 Cesena (Emilia-Romagna)

Description

The project involves the demolition of an old building with a high level of energy consumption and the construction of a new building Passive House: a dry technology multi- residence, made of wood structural panels. This technology achieves less wall thickness also important energy performance and reduce construction time by 60% compared to traditional technologies are wet. In this case, the dry technology choice was forced by the needs and goals of the project at all considering some regulatory requirements, such as compliance with the limits and boundaries of the form: any increase in the size of the walls would result in a decrease in useful areas. In addition to that, the temporary reductions have important benefits, overall in economic terms: less bank debt and income faster for customers.

Number of apartments / units :

8

Treated Floor Area according to PHPP

320 m²

Construction type

Holzbau

Year of construction

2015

Other parties involved

Architecture

arch. Stefano Piraccini, PhD

Building physics

arch. Margherita Potente

Certifier

ZEPHIR - Passivhaus Italia

Thermal envelope

Exterior wall

plasterboard Diamant (0.24 W/mk) 12.5 mm

air (0.07 W/mk) 10 mm

insulation Isoroccia (0.035 W/mk) 40 mm

xlam (0.12 W/mk) 120 mm

wood fiber insulation (0.04 W/mk) 100 mm

insulation isover (0.032 W/mk) 100 mm

air 20 mm

wood coating (0.180 W/mk) 20 mm

U-value = 0.119 W/(m²K)

Basement floor / floor slab

Ceramic Floor (1 W/mk) 15 mm

concrete (0.9 W/mk) 50 mm

insulation isocal (0.132 W/mk) 150 mm

insulation lape styrodur (0.037 W/mk) 100 mm

U-value = 0.185 W/(m²K)

Roof

plasterboard (0.25 W/mk) 12.5 mm

air (0.150 W/mk) 30 mm

aluminum (220 W/mk) 0.5 mm

xlam (0.12 W/mk) 200 mm

insulation styrodur (0.039 W/mk) 120 mm

insulation isover superbac (0.037 W/mk) 200 mm

concrete (0.94 W/mk) 40 mm

U-value = 0.095 W/(m²K)

Frame

Finstral, top 90

frame in PVC U_f = 1.0 W/m²K

Editor's note: For a very good thermal protection and full comfort in passive houses U_f-/ U_w- values about [0,85 (W/(m²K))] are recommended.

This definition is always linked to the specific climate data – an alternative evaluation might be possible.

U_w-value = 0.91 W/(m²K)

Glazing

triple glazing with two low-e coatings and argon filling TGI spacer 0.038 W/mK

U_g-value = 0.6 W/(m²K)

g-value = 62 %

Entrance door

finstral

door in pvc

$U_d\text{-value} = 1 \text{ W}/(\text{m}^2\text{K})$

Mechanical systems

Ventilation

Zehnder , focus 200

Ventilation with eff. specif. heat recovery 91%
combined with a heat pump

Heating installation

heat pump Mitsubishi Zubadan PUAZ-SHW140YHA

The heat pump produces hot water and contributes to heating the supply air.

Domestic hot water

Sanitary hot water production by heat pump

storage capacity: 1.000 l

Additional information

Construction costs

1400 €/m² Treated Floor Area according to PHPP (Costs of group 200-700)

PHPP values

Air tightness

$n_{50} = 0.4/\text{h}$

Annual heating demand

12 kWh /(m²a) calculated according to PHPP

Heating load

8 W/m²

PER demand (renewable Primary Energy)

74 kWh /(m²a) on heating installation, domestic hot water, household electricity and auxiliary electricity
calculated according to PHPP

Generation of renewable energy

125 kWh /(m²a) based on the projected area

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ID: 5959

Allgemeine Angaben

Zertifiziertes Gebäude - Passivhaus Neubau

Teilnahme an den Tagen des Passivhauses
'19

Objektyp

Freistehendes Einfamilienhaus

Bauort

I - 47522 Cesena (Emilia-Romagna)

Beschreibung

The project includes a concrete and brick structure, with a coat system with a plaster effect and large thicknesses of thermal insulation. This structure, which defines the heated casing, is integrated with a second structure in wood and steel that has the function of solar shielding: it favors winter solar radiation and fencing the summer one. The project is determined by a simple morphology that reinterprets traditional building types and follows the same generative principles that are part of bioclimatic architecture.

Designing in standard Passivhaus takes on an important role in affirming the ethics of intervention, also to determine a virtuous model of redevelopment of the existing that can be emulated with a view to urban regeneration that looks to the preservation of energy resources for future generations and at the same time to the quality of living and living cities.

Anzahl Wohn- / Nutzeinheiten :

1

Energiebezugsfläche nach PHPP

102 m²

Konstruktion

Massivbau

Baujahr
2018

Projektbeteiligte

Planung der Architektur
STEFANO PIRACCINI

Planung der Bauphysik
MARGHERITA POTENTE

Zertifizierer
ZEPHIR

Thermische Hülle

Außenwand

Plaster 15 mm (0.900 W/mK)

Brick Porotherm Blocks 300 mm (0.140 W/mK)

EPS 200 mm (0.031 W/mK)

U-Wert = 0.114 W/(m²K)

Kellerdecke / Bodenplatte

Armed insole 150 mm (2.00 W/mK)

Insulation 180 mm (0.038 W/mK)

Isocal 140 mm (0.132 W/mK)

U-Wert = 0.167 W/(m²K)

Dach

Masonry 240 mm (0.740 W/mK)

XPS 100 mm (0.038 W/mK)

Rock wool 220 mm (0.032 W/mK)

U-Wert = 0.1 W/(m²K)

Fensterrahmen

FINSTRAL , TOP 90

PVC frame

U_w-Wert = 0.95 W/(m²K)

Verglasung

triple glazing with two low-e coatings and argon filling TGI spacer 0.038 W/mK

U_g-Wert = 0.6 W/(m²K)

g -Wert = 54 %

Eingangstür

U_d-Wert = 1 W/(m²K)

Anlagentechnik

Lüftung

Zehnder, ComfoAir Q600 ERV PHI-certified

Ventilation with eff. specif. heat recovery 78%

combined with a heat pump

Heizung

HEAT POMP Mitsubishi electric mod. ecodan puhz-sw75vha

hidroboxersd-vm2c 7.3kw

The heat pump produces hot water and contributes to heating the supply air.

Warmwasser

Sanitary hot water production by heat pump
storage capacity: 500 l

Zusätzliche Informationen

Ökologie

Design strategies adopted as ecological aspect of the project:

- use of wooden sunshades for the regulation of solar radiation;
- presence of a water tank for evaporative cooling.

Baukosten

1750 €/m² Energiebezugsfläche nach PHPP (Kostengruppe 200-700)

Kennwerte PHPP

Klima

Warm-gemäßigt

Luftdichtheit

n₅₀ = 0.3/h

Heizwärmebedarf

14 kWh/(m²a) berechnet nach PHPP

Gebäudeheizlast

14 W/m²

PE-Bedarf (nicht erneuerbare Primärenergie)

127 kWh/(m²a) für Heizung, Warmwasser, Hilfs- und Haushaltsstrom berechnet nach PHPP

PER-Bedarf (erneuerbare Primärenergie)

62 kWh/(m²a) für Heizung, Warmwasser, Hilfs- und Haushaltsstrom berechnet nach PHPP

Erzeugung erneuerbarer Energie

25 kWh/(m²a) Bezug auf überbaute Fläche

Kühllast

13 W/m²

Kühl-/Entfeuchtungsbedarf

13 kWh/(m²a) berechnet nach PHPP

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ID: 5194

Allgemeine Angaben

Passivhaus Neubau

Teilnahme an den Tagen des Passivhauses
'17, '19

Objektyp

Geschosswohnungsbau

Bauort

I - 47522 CESENA (Emilia-Romagna)

Beschreibung

The project demonstrates how it is possible to achieve the energy performance of a Passivhaus, not only in new constructions, but also in urban aggregates of historic buildings or belonging to the first extensions of our cities. The experimentation of this design protocol on an urban aggregate is significant especially for Italy, where each city is characterized by this typology. The project re-qualifies a degraded building, resets energy consumption and emissions into the atmosphere, and improves its structure, making it anti-seismic. The project involves the residence and the study of architect of the architect himself. Innovative construction technologies have been used in full freedom with the aim of achieving the efficiency of a Passive House by reducing costs as much as possible. The building will have a mixed structure of wood (lamellar and XLAM), steel, reinforced concrete masonry and armed concrete, where every material works at best by exploiting its natural characteristics.

Anzahl Wohn- / Nutzeinheiten :

1

Energiebezugsfläche nach PHPP

177 m²

Konstruktion

Mischbau

Baujahr

2017

Projektbeteiligte

Planung der Architektur

STEFANO PIRACCINI

Planung der Bauphysik

MARGHERITA POTENTE

Thermische Hülle

Außenwand

INTONACO 15mm

LATERIZIO 300mm

XPS(027) 220mm

RASATURA

U-Wert = 0.113 W/(m²K)

Kellerdecke / Bodenplatte

SOLETTA ARMATA 150mm

ISOLANTE (036) 200mm

U-Wert = 0.174 W/(m²K)

Dach

XLAM 180mm

POLIETILENE 0,500

ISOLANTE STYRODUR (032) 100mm

ISOLANTE STYRODUR (032) 200mm

U-Wert = 0.09 W/(m²K)

Fensterrahmen

FIN-Project Nova-line, FINSTRAL

U_w-Wert = 0.92 W/(m²K)

Verglasung

triple glazing with two low-e coatings and argon filling TGI spacer 0.038 W/mK

U_g-Wert = 0.6 W/(m²K)

g -Wert = 54 %

Eingangstür

finstral

door in pvc

$U_d\text{-Wert} = 1 \text{ W}/(\text{m}^2\text{K})$

Anlagentechnik

Lüftung

ZEHNDER, ComfoAir Q600 ERV

Ventilation with eff. specif. heat recovery 78%
combined with a heat pump

Heizung

HEAT POMP Mitsubishi electric mod. ecodan puhz-sw75vha
hidroboxersd-vm2c 7.3kw

The heat pump produces hot water and contributes to heating the supply air.

Warmwasser

Sanitary hot water production by heat pump
storage capacity: 300 l

Zusätzliche Informationen

Baukosten

1350 €/m² Energiebezugsfläche nach PHPP (Kostengruppe 200-700)

Kennwerte PHPP

Luftdichtheit

$n_{50} = 0.6/\text{h}$

Heizwärmebedarf

9 kWh / (m²a) berechnet nach PHPP

Gebäudeheizlast

10 W/m²

PE-Bedarf (nicht erneuerbare Primärenergie)

98 kWh / (m²a) für Heizung, Warmwasser, Hilfs- und Haushaltsstrom berechnet nach PHPP

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