

Operational success story

Kindergarden 'Chico Mendez'

New construction 2007, Cologno monzese (IT)



GENERAL INFORMATIONS

Owner: Municipality of Cologno Monzese

Architect: Arch. Lorenzo Iachellini

Engineer: Eng. Salvatore Carlucci

Use: Kindergarten for 60 students

Heated surface: Usable area of 684 m²:
 - m² 412 di nuova costruzione
 - m² 272 di ristrutturazione dei corpi esistenti

Built in: 2007

Cost: Total budget 1.050.000 €
 • € 690.000 from the Municipality
 • € 360.000 from the Province of Milan

Total cost:
 a) Construction € 922.000,00
 b) Security in the construction phase € 12.720,00
1) Total (a + b) € 934.720,00

Method of financing: Financial support by Provincia of Milano of 360.000 €

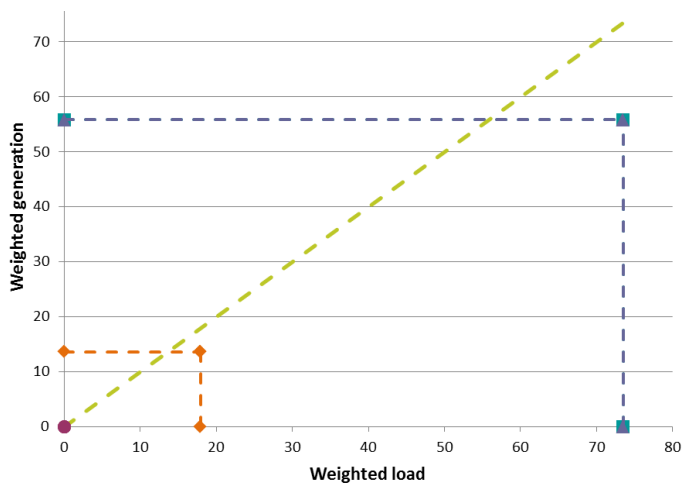
ENERGY PERFORMANCE

Primary energy demand: 1,80 kWh/m²a

Type of certification: Procedura di calcolo CENED

CO₂ emissions: 3,90 kg/(m²*y)

Energy produced by RES: 4,80 kWh/m²a



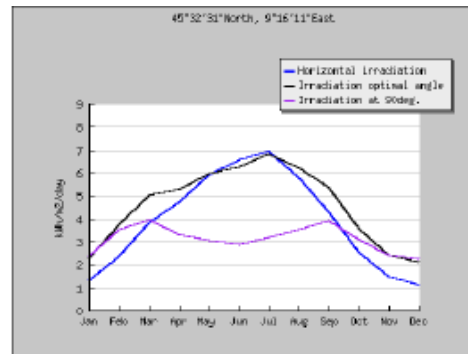
Graphic1: Monitored Import/Export calculated by Net ZEB Evaluation Tool
 Developed within the IEA - SHC Task 40/ECBCS Annex 52 - "Towards Net Zero Energy solar Buildings". Created by: Eurac Research within STA. Draft: V4.3

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DESCRIPTION OF THE CLIMATE:

Address:	Via Cesare Battisti 127, 20093 Cologno Monzese
GPS:	Location: 45.542, 9.270
Altitude:	131 m
Yearly solar radiation:	6,07 kWh/m ² *day (Average sum of horizontal global irradiation per square meter received) 2220 kWh/m ² (Average sum of horizontal global irradiation per square meter received) (http://re.jrc.ec.europa.eu/pvgis/apps4/pvest.php)
(graphic)	
HDD20 (http://www.degreedays.net/):	HDD20= 2752 Milano Linate, IT (45.54, 29.270)
CDD26 (http://www.degreedays.net/):	CDD26= 113 Milano Linate, IT (45.54, 29.270)
HDD20, Italian Classification: (italian law: n. 412 26/august/1993)	HDD20= 2404 Cologno Monzese



SPECIFICATIONS OF THE BUILDING:

1) Thermal envelope

Opaque surface / heating volume

Compact: $S/V = 0.53 \text{ m}^{-1}$

U-value of opaque surface

- Wall: 0.157 W/m²K, with 20cm mineral foam
0.171 W/m²K, with 14 cm mineral foam
- Roof: 0.147 W/m²K, with 24cm mineral foam
- Basement: 0.204 W/m²K, with 16 cm mineral foam

U-value windows

U_w: 1,30W/m²K
U_g: 0,7 W/m²K
g 0,45

2) Building system

Ventilation system with heating recovery

External air/new air: 3000m³/h
Electric consumption 200Pa: 2*1000W
Efficiency: 90,50%

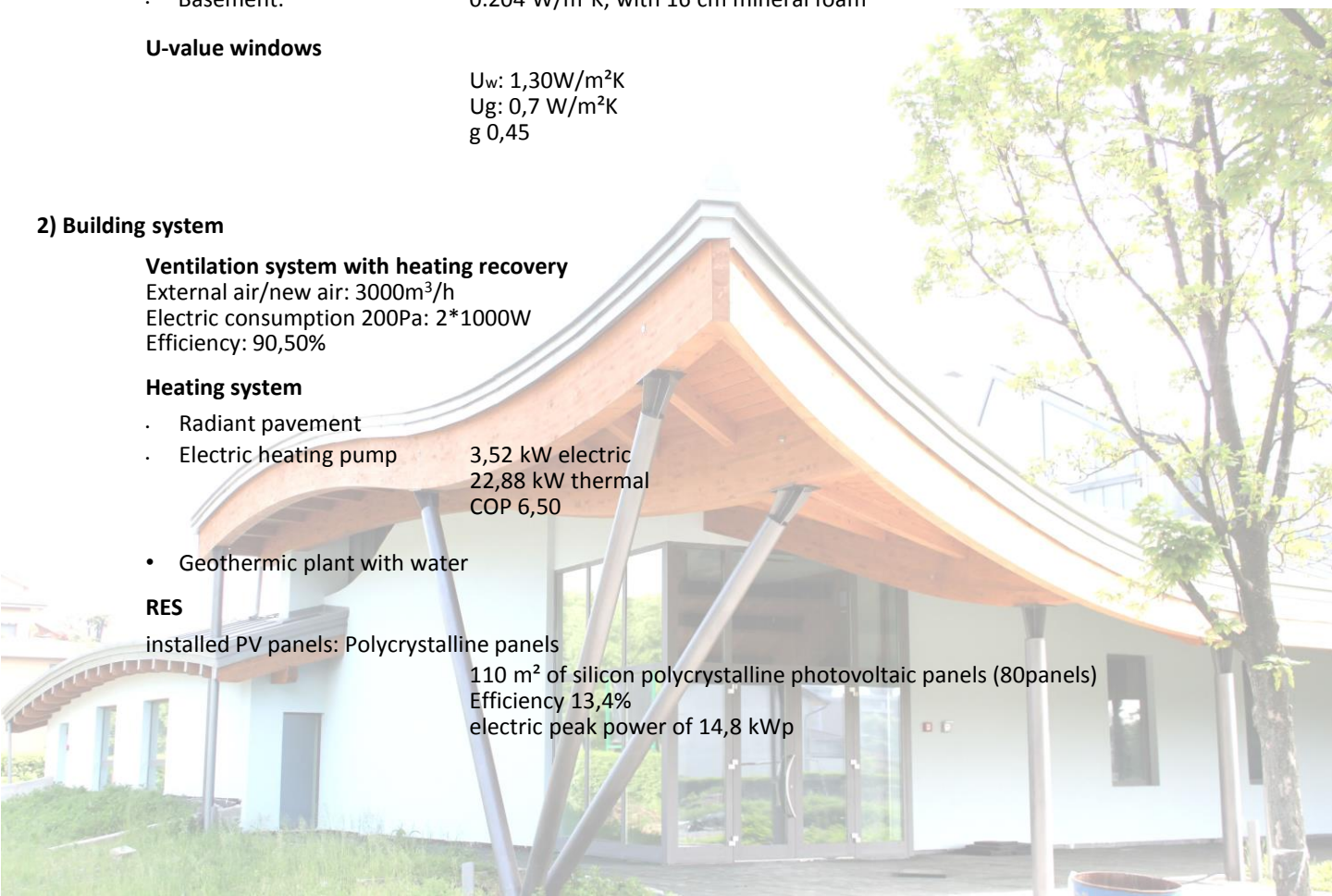
Heating system

- Radiant pavement
- Electric heating pump 3,52 kW electric
22,88 kW thermal
COP 6,50
- Geothermic plant with water

RES

installed PV panels: Polycrystalline panels

110 m² of silicon polycrystalline photovoltaic panels (80panels)
Efficiency 13,4%
electric peak power of 14,8 kWp



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2007

Start of the design of the project of the Kindergarten Chico Mendez

At that time, the framework of the energy efficiency in buildings was very different from today. The energy legislation was going to be changed thanks to the European Directives.

The Kindergarten was designed starting from these important changes. In particular the objective was to achieve the passive house target, an experimental concept underdeveloped in Germany.

As required by the EPBD, from 2018 public buildings will reach the target of nZEB, so the municipality decided to reach this energy performance target, experimental and unthinkable, for the level of knowledge of this period.



2008

Public tender the assignment of the construction work

Work began July 16 2008, with the end of work fixed on 15 July 2009. The building company winner was identified following a public tender procedure, as required by law.

Building construction

At the time of building construction many technologies there were not available in the building market, such as insulation system, correction and elimination of thermal bridges, windows and doors installation, radiant heating systems, and prefabrication of wooden structures.



11 June 2010

On 11 June 2010, the public administration revoked the contract with the winner building company. The building realization was achieved the ¾ of total work.

For the missing works the municipality contacted directly the craftsmen and the companies, in order to finish the works. The work finished in August 2011.

Some problems found were for the economic computation, because some of these works were innovative, so at national level there was no standard economic value. These lack of economic costs were for the innovative technologies often used in passive buildings (air ventilation system with heating recovery, geothermal plant, heat pump) and on the building envelope solutions (insulations, windows ...).



2011

Inauguration of the school.

