AIDA AFFIRMATIVE INTEGRATED ENERGY DESIGN ACTION

Co-funded by the Intelligent Energy Europe Programme of the European Union

EURAC research

Operational success story

Greenhouse,
Monguelfo (BZ)

GENERAL INFORMATIONS

Owner:	Moser Holzbau S.R.L
Architect:	Arch. Martin Oberhammer
Energy concept	Dr. Ing. Ruben Erlacher, Ph.D
Thermal mechanical engineer	Burger S.R.L http://www.burger-online.it
Contractor	Moser Holzbau S.R.L http://www.moser-holzbau.com
Windows	Tecno Fenster S.R.L http://tecnofenster.it/it/index.asp
Doors	Gruber OHG SNC http://www.gruber-tueren.com
Electric plant	Elektro Mairhofer snc http://www.elektro-mairhofer.it
Hydraulic plant and ventilation system	Burger S.R.L http://www.burger-online.it
Use:	Residential
Heated surface (usable area):	Residential 460,73 m^2
Volume netto:	1.266 m^3
Built in:	2013
Cost:	Planning cost: €970.000 € + Iva
Method of financing:	Private part

ENERGY PERFORMANCE

Primary energy demand:	40,51 kWh/m²a
Type of certification:	CasaClima Gold Nature
Heating energy demand:	4.6 kWh/m²a with the Bolzano climate 8.30 kWh/m²a with the Monguelfo climate
CO_2 emissions:	92,06 kg/(m²*y)

Green House		
Primary energy demand	18664 kWh/a	40,51 kWh/m²a
Heating Area (net)	460,73 m^2	
Energy production	0 kWh/a	0,00 kWh/m²a

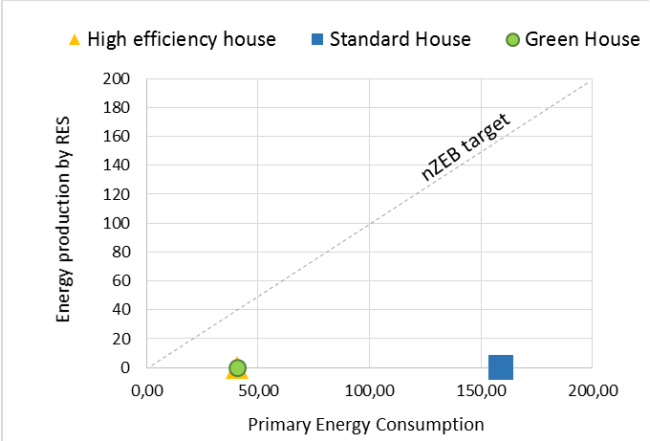

Grafico 1: Confronto fabbisogni energetici di energia primaria tra una abitazione standard (quadratino in blu), un edificio ad elevata efficienza (triangolo giallo) e la residenza GreenHouse (cerchietto verde) che coincide con un edificio ad elevata efficienza. Qualora fosse munito di sistemi di generazione da FER in loco si avvicinerebbe alla linea 'nZEB target'.

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DESCRIPTION OF THE CLIMATE:

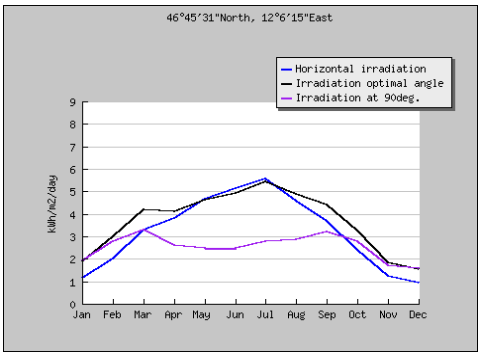
Address: Lungo Rio S. Giovanni Nr. 10, 39035 Monguelfo

GPS: Location: 46.758709, 12.104419

Altitude: 1200 m

Yearly solar radiation: 3,68 kWh/m² *day (Average sum of horizontal global irradiation per square meter received)
1340 kWh/m² (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= 24677 Dobbiaco, IT (12.22E,46.73N)

CDD26 (http://www.degreedays.net/): CDD26= 5 Dobbiaco, IT (12.22E,46.73N)

HDD20, Italian Classification: HDD20= 4.323 Monguelfo Muniipality
(italian law: n. 412 26/august/1993)

SPECIFICATIONS OF THE BUILDING

1) Thermal envelope realized by X-Lam Panels

Opaque surface / heating volume

Compact: S/V = 0.55 1/m

U-value of opaque surface

- Wall: 0.13 W/m²K, Gutex Thermosafe 20cm
  0.14 W/m²K, XPS 24cm
- Roof: 0.09 W/m²K, panels of fiber of wood (110Kg/m³) 34 cm
  0.12 W/m²K, panels of fiber of wood (110Kg/m³) 27 cm
- Basement: 0.16 W/m²K, panels XPS 20cm

U-value windows

Triple glass: (4/18/4/18/4)
Uf: 0,1.1 W/m²K 0,73
Uw:
Ug: 0,50 W/m²K 0,6
g 0,51

2) Building system

Ventilation system with heating recovery
Two machines:
- VMC1 Efficiency: 100 % - Air volume: 340 m³/h
- VMC2 Efficiency: 96 % - Air volume: 170 m³/h

Heating system: District heating (radiant pavement)

CONTEXT AND HISTORY OF THE BUILDING

10.2012 – 11.2012	Design phase
11.2012	Start the building construction in steel concrete
08.03.2013	Start the building construction in solid wood
22.03.2013	Finish of the roof construction
12.2013	Ground and first floor - Ready for occupation
03.2014	Finish of the building