PASSIVE HOUSE CHE

by Sergiu Petrea / 2016-06-29 12:03:48 / International / 14954 / EN

Primary energy need :

89 kWhpe/m².year

(Calculation method : Other)

ENERGY CONSUMPTION

Economical building *Building*

< 50	A
51 à 90	B
91 à 150	C
151 à 230	D
231 à 330	E
331 à 450	F
> 450	G

Energy-intensive building

Building Type : Isolated or semi-detached house
Construction Year : 2014
Delivery year : 2015
Address 1 - street : 720032 SUCEAVA, Romania
Climate zone : [Dfb] Humid Continental Mild Summer, Wet All Year

Net Floor Area : 190 m²
Construction/refurbishment cost : 400 000 €
Cost/m2 : 2105.26 €/m²

Certifications :

Proposed by :

TECTO arhitectura

General information

The challenge was to create a simple,sustainable, two-storey unit that would fit into a special site: a matureforest inside a northern Romanian city.

House Che subtly rises aroundthe inner courtyard in a mesmerizing natural environment with whom the buildingcommunicates through wide openings and various inner-out passages.

The house was designed andbuilt to reach the passive house standard in the harsh climate conditions ofnorthern Romania (Suceava) and is in the passive evaluation process. Theestimated energy demanded for heating and hot water is lower than 14kwh/sqm/year (according to preliminary phpp calculations).

The natural day factor is fourtimes bigger than the usual amount while the generous glazed surfaces alsoincrease the solar passive energy gain. The iconic shape of the roof maximizesthe solar input used for heating, offering in the meanwhile a contemporarydynamic expression.

To match the surroundings,exterior finishing is made out of natural cedar slats that preserve theirphysical-chemical properties even in the northern climate. The green roofrecovers the vegetal surface displaced for the house construction.

The minimal need for heatingis covered by a ground/water power heat pump. Photovoltaic panels will beinstalled on the roof at a later stage in order to provide the electric energynecessary for vital consumption and domestic hot water is obtained throughsolar thermal collectors and a heat buffer tank.

See more details about this project

http://tecto.ro/portfolio/passive-house-che-casa-pasiva-che/
http://www.home-review.com/2015/05/the-wild-child/
http://inhabitat.com/passive-house-che-in-romania-has-a-super-fun-indoor-net-canopy/
http://www.trendir.com/house-design/energy-efficient-forest-home-has-suspended-net-lounge.html
http://www.gizmag.com/passive-house-che/35469/

Stakeholders

Stakeholders

Function : Designer

TECTO Arhitectura

office@tecto.ro

http://tecto.ro/
Architecture design

Contracting method

Other methods

Energy

Energy consumption

Primary energy need : 89,00 kWhpe/m^2.year

Primary energy need for standard building : 111,00 kWhpe/m^2.year

Calculation method : Other

CEEB : 0.0001

Envelope performance

Envelope U-Value : 0,11 $W.m^{-2}.K^{-1}$

More information :
Exterior insulation to ambient air - 0.11W/(m^2K)
Exterior insulation underground - 0.12W/(m^2K)
Windows - 0.63W/(m^2K)
External doors - 0.10W/(m^2K)

Building Compactness Coefficient : 0,32

Indicator :

Air Tightness Value : 0,40

Renewables & systems

Systems

Heating system :

- Condensing gas boiler
- Low temperature floor heating

Hot water system :

- Condensing gas boiler

Cooling system :

- No cooling system

Ventilation system :

- Natural ventilation
- Double flow heat exchanger

Renewable systems :

- Heat pump

Environment

Urban environment

The construction fits into a special site: a mature forest inside a northern romanian city. The building keeps all the existing trees on site and also recovers the existing lawn in the shape of the green roof.

Land plot area : 1 285,00 m^2

Built-up area : 15,00 %

Green space : 1 000,00

Products

Product

Proclima Membranes

Proclima

info@proclima.com

http://de.proclima.com/

Product category : Gros œuvre / Charpente, couverture, étanchéité

High performance vapour retarding and airproofing system for maximum protection from structural damage and mould. Highly permeable, roof lining and sarking membranes that actively manage moisture, 3-4 ply, suitable for temporary covers.

Both designers and workers.

Costs

CONTEST

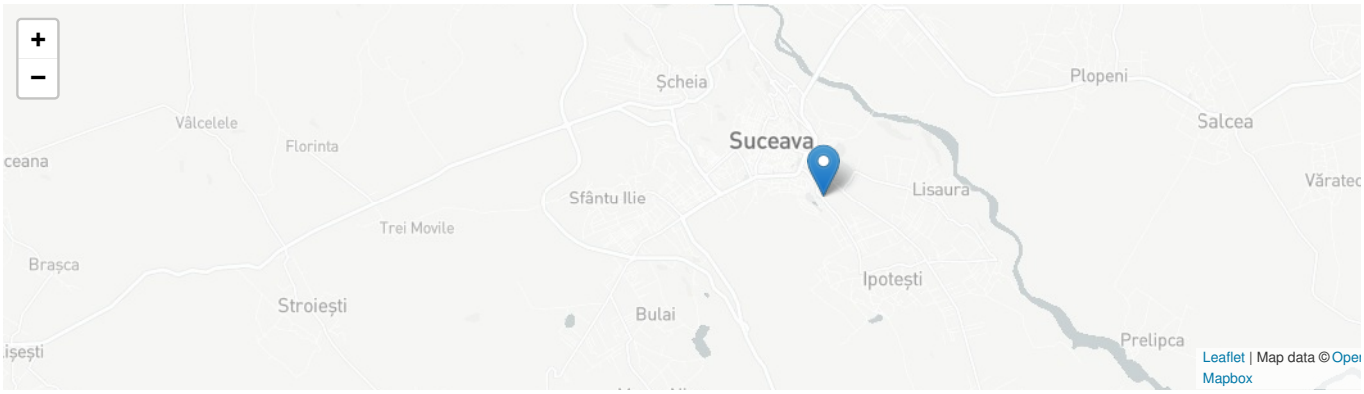
Reasons for participating in the competition(s)

The main principles and goals of sustainability and energy efficiency are pursued by the use of wooden structures, all natural insulation materials, green roof, high performance windows and the encompassment of a resource management system for heating and electricity supply.

Building candidate in the category

Green Building Solutions Awards 2016

Users' Choice Award



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