


Lab'House

by Louis Engel / 2016-07-05 10:52:26 / France / 10013 / FR

New Construction



Primary energy need :

36.3 kWhep/m².an

(Calculation method : RT 2005)

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 : 2014
Address 1 - street : 71 A avenue Paul RAVOUX 30400 VILLENEUVE-LÈS-AVIGNON, France
Climate zone : [Csa] Interior Mediterranean - Mild with dry, hot summer.

Net Floor Area : 250 m² SHON RT
Construction/refurbishment cost : 557 000 €
Cost/m2 : 2228 €/m²

Certifications :



General information

This project is a personal project of the architect Catherine PERRIN LABEUR. This home for a family of five must meet the criteria defined by the Passiv'Haus. For its construction, it is imperative to use materials used in the region and use the expertise of local businesses. The terrain is steep and has, since its upper level, a clear view of the Rhone valley from the east. This view will be staged by the project. The project includes a large living area located in the upper part and the master bedroom with bathroom. On the lower floor is space for children consists of 3 bedrooms with private shower, desk and closet, the "lungs" of the passive house in which are grouped all the "vital organs" of a passive house.

Sustainable development approach of the project owner

"Today the passive house is often associated with wood construction, says Catherine Perrin-Toil. But there is no question for us to build wooden full Provence!

Our challenge was to build a passive house with commonly used methods buildings in our region ... ".

To assist in the design of this house, it uses an experienced heating engineer Hugues Brassy of Diagnos Thermo design office. Together they define a design specification:

- Achieve a compact design to limit m² of contact with the outside walls
 - Define a constructive fashion to identify from the first sketches thermal bridges to be able to provide solutions well in advance.
 - Favoring large openings to the south that will be protected from the summer sun with solar radiation and winds that will capture the energy in winter
 - Limiting the number and the surfaces of the openings northeast
 - Favoring systems openings strikes rather than sliding windows for better airtightness
 - Design a sealed outer envelope in which will limit the crossings to the outside, potential sources of air leakage. All essential crossings will be identified and treated to reduce the risk of leaks.
 - Install a dual flow ventilation inside the sealed casing coupled with a Canadian wells to optimize the efficiency of ventilation in winter and summer.
- All these points will affect the architectural choice of the house.

The final study results in a need for heating 14 kWh / m² year, total primary energy consumption of 110 kWh / m².an and overheating rate of only 4%, in a region where it takes with hot weather. The permit was deposited before 1 January 2013, the RT2012 has not applied to the project.

Architectural description

Facing south, the house of 250 sqm, by its sheer volume and wide openings naturally let the heat out. To take advantage of the view from the day room, there were other solutions to implement them on the upper part of the house. The strong slope of the land enabled the development of a long bridge by a corridor and a terrace that serves the highest level including the parts of day and the master bedroom. On the lower floor are the children's rooms, office and technical room.

If you had to do it again?

"We made some design choices that were dear to us, but that does not necessarily facilitated the performance required by the label, she says. That's what made the particularly exciting year! For clients, I probably would have avoided some difficulties, especially from the perspective of the management of thermal bridges. "

See more details about this project

http://www.archicontemporaine.org/RMA/p-8-Ig0-Lab-House...-une-maison-passive.htm?fiche_id=3925

Stakeholders

Stakeholders

Function : Contractor

M et Mme LABEUR Jean Paul

Function : Designer

Catherine PERRIN LABEUR

cplarchitecte@orange.fr

Function : Thermal consultancy agency

DIAGNOS THERMO

Energy

Energy consumption

Primary energy need : 36,30 kWh/m².an

Primary energy need for standard building : 120,00 kWh/m².an

Calculation method : RT 2005

CEEB : 0.0002

Breakdown for energy consumption : Heating: 14 kWh / m² / year

Envelope performance

Envelope U-Value : 0,13 W.m⁻².K⁻¹

More information :

- Insulated polystyrene concrete slabs (370 mm)- Construction of concrete chipboard- Structural steel with zinc covering- External joinery aluminum, double glazing being sufficient according to PHPP study.

Indicator : n50

Air Tightness Value : 0,50

Renewables & systems

Systems

Heating system :

- Electric radiator
- Canadian well

Hot water system :

- Other hot water system

Cooling system :

- Canadian well

Ventilation system :

- Double flow heat exchanger
- Canadian well

Renewable systems :

- No renewable energy systems

Other information on HVAC :

The double flow MCV selected PHI is certified with a yield higher than 75%. It is coupled to a Canadian terracotta wells down to depths of 3 meters, allowing in summer to breathe air at 21 ° C, even in hot weather. The routing of air ducts in the plenum is created between the ceiling of the ground floor and first floor floor. This horizontal technical space will also serve as the pathway of power supplies, power supplies cold and hot water shower rooms and the passage of wastewater collection pipes. In extra, three heated towel rail in the bathroom switch on automatically if the temperature passes the threshold of 20 ° C to complete a small heating coil that fires under 21 ° C. "Given the observed low power consumption, the extra is often not utilized. However, it may be useful in case of rainy winter as passive inputs are then insufficient. "The hot water is provided by a branded thermodynamics ball Emmeti, also connected to the MCV double flow.

Environment

Urban environment

Land plot area : 1 400,00 m²

Built-up area : 17,00 %

Free building sites are very rare in Villeneuve-les-Avignon; even more rare that building owners want a clear view of the Rhone Valley. Site selection is therefore based on its geographical location in the town and the views it offered. This plot of 1400 m² very high altitude eastward (over 6 meters in altitude), had an access from above to be usable.

Products

Product

Terracotta Canadian well

Product category : Génie climatique, électricité / Ventilation, rafraîchissement

The Terracotta Canadian wells down to depths of 3 meters, allowing in summer to breathe air at 21 ° C,



Prégysair

Siniat SA

500, rue Marcel Demonque Pôle Agroparc 84915 Avignon cedex 9 Tél : +33 4 32 44 44 44

<http://www.siniat.fr/fr-fr>

Product category : Gros œuvre / Structure, maçonnerie, façade

Vertical wall solution with high demands for a healthier indoor air. PRÉGYROC Air BA13 is composed of a heart made of plaster, high density, specially formulated between two cardboard siding.

- Thickness: 12.5 mm
- Width: 120 cm
- High hardness plate (I according to EN 520)
- Edges: tapered (BA)



Costs

Contest

Reasons for participating in the competition(s)

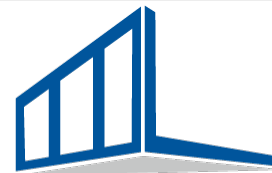
For us, this passive house project should not be associated with the concept, ecology aware sense. We prefer the concept of responsible citizenship to define our approach. We chose the passive building in a Mediterranean context, by focusing particularly on summer comfort, heating needs are low also. To achieve our targets in line with our design office:

- a compact construction to limit m² of contact with the exterior walls
- constructive way to identify from the first sketches thermal bridges to be able to provide solutions well in advance.
- favoring large openings to the south that will be protected from the summer sun with solar radiation and winds that will capture the energy in winter
- limit the number and the surfaces of the openings northeast
- focus openings Systems strikes rather than sliding windows for better airtightness
- a sealed outer envelope in which will limit the crossings to the outside, potential sources of air leakage.
- double-flow ventilation inside the sealed casing coupled with a Canadian wells to optimize the efficiency of ventilation in winter and summer.

Building candidate in the category



Energie & Climats Chauds

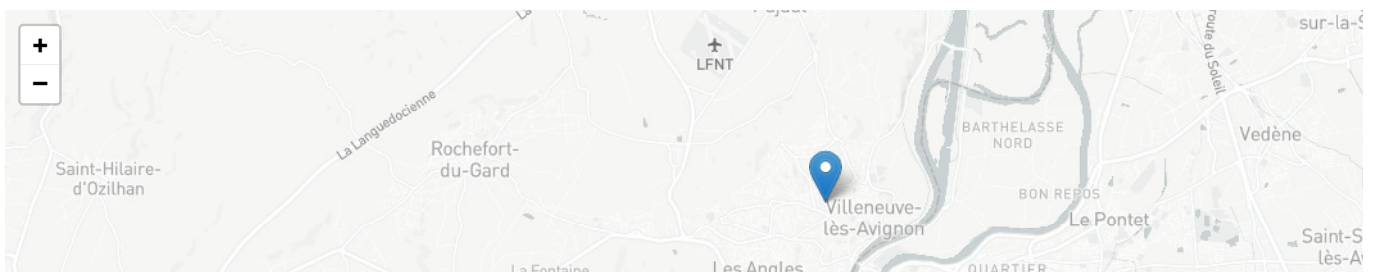


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