Modular positive energy nursery

by Jean-François Daures / 2018-07-19 11:16:03 / Francia / 9127 / FR

New Construction

Primary energy need :
136 kWhep/m².an
(Calculation method : )

ENERGY CONSUMPTION
Economical building
Building
A
B
C
D
E
F
G

< 50
51 à 90
91 à 150
151 à 250
231 à 350
331 à 450
> 450

Energy-intensive building

Building Type : Preschool, kindergarten, nursery
Construction Year : 2014
Delivery year : 2014
Address 1 - street : Rue du Cannet 34400 SAINT SéRIéS, France
Climate zone : [Csa] Interior Mediterranean - Mild with dry, hot summer.

Net Floor Area : 149 m²
Construction/refurbishment cost : 420 000 €
Number of Children : 9 Children
Cost/m² : 2818.79 €/m²

Certifications :

General information

Located on the outskirts of the village in an old vineyard, without any natural shade, this eco nursery is designed to welcome children even under the heat of the summer.

The idea was to create a large photovoltaic cold roof forming a large courtyard of 358m² overlooking the buildings and its surroundings and the courtyard in the center. Curtains dressed with vines playing the role of vertical sunscreens of 6m high come close the faces of this canopy reserved for the smallest, and protected from solar radiation as well as bad weather.

Below, a set of "boxes" in local wood is the program that includes in addition to the 12 beds, a Maternal Assistant. It is planned to be able to create extensions by adding new "boxes" to increase the capacity to 20 beds.

This equipment is self-financing over a period of 15 years thanks to the revenues generated by the photovoltaic roof.

Sustainable development approach of the project owner
The town hall of Saint Séries wanted to be equipped with an eco-nursery building. The architect proposed a construction including a production of renewable energy in adequacy with the SCOT. The architect also proposed a equipment built in local wood to be flexible and adapt to the increasing number of children from 11 to 20. The architect has proposed to vegetalize with the vine, the most common plant in the town bio-climatic facades of this equipment that have variable transparency summer / winter.

Architectural description

The goal was to create a large courtyard of 358M2 to house a modular equipment and pavillonnaire dedicated to a nursery and a relay of maternal assistant. Located on the edge of the stadium, in an old vineyard and under the crushing Mediterranean sun this roof takes advantage of the sun while protecting the children and their crib from the direct solar radiation. Vertically curtained facades of vine all height make disappear the building in the landscape and ensure the summer cooling of the outer walls. this crib of 11 beds can easily go to 20 beds as needed by the addition of a "box" in additional wood under the yard.

If you had to do it again?

The difficult management of the PMI doctors who intervene on the project including in the construction phase because of their misunderstanding of the graphic and written documents produced as early as the sketch phase of the DCE.

See more details about this project

https://www.archivision.fr/architecture

Stakeholders

Contractor

Name : Mairie de Saint Séries
Contact : Madame Arlette Larman
http://www.saint-series.com/education/

Construction Manager

Name : Jean François Daures / VISION®
Contact : Jean François Daures
www.archivision.fr

Stakeholders

Function : Thermal consultancy agency
Greenbuilding
net-greenbuilding.com
RT 2005 study, BBC study, Photovoltaic efficiency study

Function : Structures calculist
Alteabois
Gilles Amblard
www.alteabois.com
Wood structure study

Contracting method

Separate batches

Type of market

Table 'c21_spain.rex_market_type' doesn't exist

Energy
Energy consumption

**Primary energy need**: 136,00 kWh/m².an

**Primary energy need for standard building**: 298,00 kWh/m².an

**Calculation method**:

- CEEB: 0.0004

**Breakdown for energy consumption**:
- Heating: 48.4
- Sanitary hot water: 37.8
- Lighting: 11.2
- Heating auxiliaries: 4.9
- Auxilliaries of ventilation: 34

Real final energy consumption

**Final Energy**: 136,00 kWh/m².an

**Real final energy consumption/m²**: 30,00 kWh/m².an

**Real final energy consumption/functional unit**: 31,00 kWh/m².an

**Year of the real energy consumption**: 2014

Envelope performance

**Envelope U-Value**: 0.33 W·m⁻²·K⁻¹

**More information**:
- Wood frame walls, isolated by cellulose wadding, heavy wooden cladding 2cm.
- **Air Tightness Value**: 1.00

**Users' control system opinion**:
- Automated management of solar panels
- LED lighting, presence detectors, Security alarm

More information

Gain compared to the reference RT 2005: 53.4%

Renewables & systems

**Systems**

- **Heating system**:
  - Heat pump
  - Fan coil

- **Hot water system**:
  - Individual electric boiler

- **Cooling system**:
  - Others

- **Ventilation system**:
  - humidity sensitive Air Handling Unit (hygro A)

- **Renewable systems**:
  - Solar photovoltaic

**Photovoltaic roof of 358m²**
- Power 40,000 w/c
- 46000 KW / H / AN

**Smart Building**

**BMS**:
- Centralized and automatic management of solar panels.
Environment

Urban environment

Land plot area : 839,00 m²
Built-up area : 362,00 %
Green space : 477,00

The nursery is located on the edge of the village in a suburban fabric of subdivisions as we see everywhere in France.

The field on the edge of the sports field is an old vine court without any trees, no shade, to propose to make the young children stay implies a reflection on the Mediterranean climate.

Products

Product

Bosch Solarworld®
Bosch
Bosch France


Product category : Table '21_spain.innov_category' doesn't exist

190 Solarworld Solar panels
Power of 4000 wc

Guarantee of perfect operation over 30 years contract ERDF over 20 years Autofinancing over 15 years.

Costs

Construction and exploitation costs

Renewable energy systems cost : 203 600,00 €
Cost of studies : 45 550 €
Total cost of the building : 464 585 €
Subsidies : 219 423 €

Health and comfort

Indoor Air quality

Ventilation type Hygro A

Carbon

GHG emissions

GHG in use : 5,00 KgCO₂/m²/an
Methodology used :
Green building study
Life Cycle Analysis

Eco-design material:
Cellulose wadding insulation
Local wood cladding (Douglas pine)
Acoustic marmoleum flooring
Wooden joineries
Concrete imprint limited to studs.

Contest

Reasons for participating in the competition(s)

Positive energy public equipment that is self-financing over a period of 15 years

A photovoltaic roof that protects buildings and its surroundings from solar radiation and bad weather. Vegetated facades of vines to create vertical sunshades and lower the outside temperature of the walls by 15 °C. A scalable local wood building.

Building candidate in the category

Energie & Climats Tempérés

Prix du public

Prix des Etudiants