House of the childhood Les P'tites Pousses

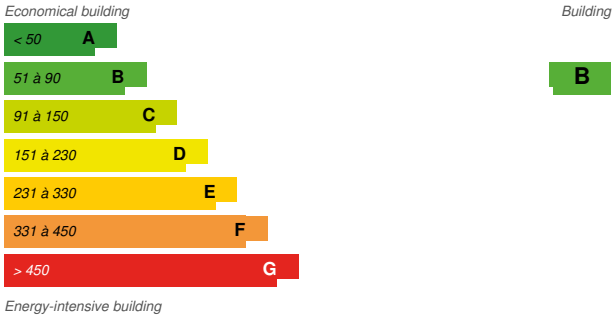
by Rémi Boscher / 2017-04-10 16:57:27 / France / 3231 / FR

Primary energy need :

74.5 kWhep/m².an

(Calculation method : RT existant)

ENERGY CONSUMPTION



Building Type : Preschool, kindergarten, nursery
Construction Year : 2012
Delivery year : 2014
Address 1 - street : 18 Bis, rue de la Roche Durand 22360 LANGUEUX, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 750 m² SHON RT
Construction/refurbishment cost : 1 400 000 €
Number of Children : 23 Children
Cost/m2 : 1866.67 €/m²

Proposed by :

General information

The increase in demand for early childhood care and the age of the premises of the former crèche prompted the commune of Langueux to create a multifunctional equipment for children. This childhood home, which can accommodate 25 children, brings together in one place a family crèche, a nursery and a parent-child care center. Located in the Parc du Grand Pré, it is set in a natural environment of quality.

Sustainable development approach of the project owner

The approach integrated the pedagogical project with the professionals and the way they wanted to welcome the children, so that circulation and operation are natural. All the decisions were discussed with the team: layout of spaces, but also taps. The file was well reflected upstream, and resulted in a quality building. Each square centimeter has been studied in terms of use, thermal, phonic, and lighting At the time of the invitation to tender for the selection of companies, certain

lots of the contract obliged the tenderers to carry out a vocational integration scheme for persons with particular social or professional difficulties (long-term unemployed persons, beneficiaries of the RSA , Disabled workers, young people under 26 years of age with a low level of education or who have never worked ...). A volume of 413 hours of labor was thus reserved for these persons by the companies holding the lots concerned.

Architectural description

The municipality wished that the architectural proposal respects the natural spirit of the park; The building, rectangular and level, offers an undulating silhouette and is part of the mesh of the park set up by the landscapers. The new volumes respect the prospects and integrate with the surrounding plantations. The façades, treated like palisades of pre-aged natural wood laid vertically, recall the wooden piles that punctuate the landscape of the park. The entrance, directly at the heart of the project, is via the hall and a wide gallery to directly serve the three living spaces. The spaces of awakening are organized in a crown around this heart. Numerous transparencies and supplemental luminous contributions to the roof contribute to the quality and variety of spaces. To avoid overheating, which is difficult to control, the exposed glass walls are set back. To the north, the facade is doubled by the band of dormitories that will serve as a buffer space. A clear public order (materials, air quality, landscape integration ...), accompanied by a financial envelope adapted to ambitions, made it possible to achieve the objectives.

Building users opinion

The feedback from users is very positive: "the atmosphere is calm, hushed, conducive to zenitude".

See more details about this project

http://www.reseau-breton-batiment-durable.fr/retour_experience/maison-de-lenfance-les-ptites-pousses

Stakeholders

Stakeholders

Function : Contractor

Ville de Langueux

Mme Jousseaume, Maire de Langueux

http://www.langueux.fr/

Function : Construction Manager

Nunc Architectes

Pierre Béout

http://www.nunc.fr/maison-de-la-petite-enfance-a-Langueux-22.html#fiche

Type of market

Realization

Energy

Energy consumption

Primary energy need : 74,50 kWhep/m^2.an

Primary energy need for standard building : 93,50 kWhep/m^2.an

Calculation method : RT existant

Breakdown for energy consumption : Other: 27% Breakdown: 21% DHW : 20% Heating: 15% Lighting: 14% Current sockets: 3%

Real final energy consumption

Final Energy : 80,00 kWhef/m^2.an

Real final energy consumption/m2 : 74,50 kWhef/m^2.an

Envelope performance

Envelope U-Value : 1,36 $W.m^{-2}.K^{-1}$

More information

The energy performance of the project makes it possible to envisage a consumption level approaching the German passive standard, ie 15 kWh / m² / year in heating. 2 airtightness tests were carried out (closed / covered and reception works).

Renewables & systems

Systems

Heating system :
- Individual electric boiler

Hot water system :
- Individual electric boiler

Cooling system :
- Geothermal heat pump

Ventilation system :
- Double flow heat exchanger

Renewable systems :
- Heat Pump on geothermal probes
- Heat pump

Other information on HVAC :
The town of Trégueux is a member of the Public Energy Advisory Service (CEP) of the local energy agency (ALE) of the country of Saint-Brieuc. An analysis of the consumption was carried out by this service, based on physical surveys carried out by a technician from the town of Langueux. The realization of a thermography makes it possible to complete the study by the analysis of the envelope.

Geothermal (4 probes) COP 3.9 coupled to a water / water CAC. Diffusion by radiant ceiling panels (offices and exchange offices) Hot air diffused by aero-network (other premises) Power consumption of 18 kW

Smart Building

BMS :
The building is equipped with a centralized technical management (GTC) in order to measure and calculate the energy consumption by specific substation: heating, DHW heating, lighting, socket outlets, ventilation.

Environment

Urban environment

Land plot area : 750,00 m^2

The Maison de l'enfance is located close to the town center and in a landscaped setting that has won the choice of location. The preferred modes of transport by the users are the car and the soft trips (project very well connected to the pedestrian paths). The PLU approved in 2005 and the Action Plan for Sustainable and Sustainable Development (Agenda 21) adopted in 2009 by the municipality, fueled the initial reflections on this project. In terms of integration into the built heritage, the objective is not to conceal the home of childhood, the emergence of the roof and the accessibility to the building allow a clear identification of it. The presence of glazed parts guarantees an interior and exterior visual opening and exchange. The house of childhood has been established on experimental plots of plantations of pines in sowing, in order not to disrupt the environment and the biodiversity installed for several years in the approaches. At the time of the invitation to tender for the selection of companies, certain lots of the contract obliged the tenderers to carry out a vocational integration scheme for persons with particular social or professional difficulties (long-term unemployed persons, beneficiaries of the RSA , Disabled workers, young people under 26 years of age with a low level of education or who have never worked ...). A volume of 413 hours of labor was thus reserved for these persons by the companies holding the lots concerned.

Products

Product

Monitoring of consumption by the Public Energy Advisory Service (CEP) of the Pays de Saint Brieuc

Pays de Saint Brieuc

contact@ale-saint-brieuc.org

http://www.ale-saint-brieuc.org/

Product category :

The town of Trégueux is a member of the Joint Energy Agency (CEP) of the Local Energy Agency (ALE) of the country of Saint Brieuc. An analysis of the consumption was carried out by this service, based on physical surveys carried out by a technician from the town of Langueux. The realization of a thermography makes it possible to complete the study by the analysis of the envelope.

Overall analysis: On the regulated stations, actual consumption is slightly higher than the theoretical consumption resulting from the regulatory thermal study, in particular for the "hot water" and "auxiliary ventilation" items.

Ventilation

DHW
The DHW represents about 20% of the building's overall energy consumption. The "water games" ball accounts for about 44% of the DHW consumption. The "water games" activity increases by 150% the average daily consumption of this ball. To relativize, this represents 15kWh / day of implementation of the activity. The consumption of keeping the temperature of the balloon "plays of water" is, with equal volume, 60% higher than the other balloons. Piping in the upper part (without heat insulation) and the higher setpoint temperature are probably the main explanations. The start-up time of the balloon resistors is an anarchic one and shows that the HC / HP contactors, which are expected at the market, have probably not been installed.
Areas for improvement:
Complete the insulation of the balloons and install insulating sleeves on the visible pipes
Install HC / HP contactors to avoid untimely start-ups of the resistors and take advantage of the nightly rates (cautionary walk may be necessary on the day of water activities).
Consider the installation of solar collectors for the production of DHW in the part laundry with pre-connector to power the washing machine.
Check the possibility of modifying the sensitivity of the detectors integrated in the exchange valves.
Sensitize users on water and energy consumption in the broad sense.

Heating:
The heating represents about 15% of the building's overall energy consumption Since delivery, the electrical resistance was originally only 29kWh consumption (over the first month of operation)

Thermography:
The use of the thermal camera has made it possible to draw some lessons: a good performance of the walls opaque to the global, a recovery of insulation, following the infiltration of water in phase construction site, well managed, joinery not all at the same level Performance (aluminum chassis, premature wear of the seal)
A slab / frame junction not obvious to be treated with this constructive mode, a consistency between the target (passive standard <15 kWhef / m2.an), thermal studies (19.5 kWhep / m2.an) and real heating consumption (14 kWhep / m2.an).

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Costs

Construction and exploitation costs

Global cost : 1 400 000,00 €

Global cost/Children : 60869.57

Total cost of the building : 1 060 715 €

Health and comfort

Water management

Valves are timed, dual flush flushers and a pressure reducer have been installed.
The building was positioned on the
Pines, already existing and partially permeable (created during the development of the Park). Consequently, there was no supplementary road
Waterproofing of the floors except the grip of the building. The building thus fits into a landscape frame allowing rainwater infiltration.

Indoor Air quality

The project manager has oriented the choice of materials to optimize their sanitary quality: wood fiber insulation (untreated and from sustainably managed forests) and recycled cellulose wool (and rock wool on the ceiling), linoleum flooring and stoneware. Real-time management of the installations is possible thanks to the GTC and thus ensures that ventilation equipment is maintained in good working order. On the other hand, several controls are provided on the ventilation systems

(temperature, flow, clogging of the filters) and heating. A survey of pollutants (benzene, formaldehyde, carbon dioxide) was carried out after receipt. The results are very good; The concentrations of these pollutants are much lower than the regulatory guideline values

Comfort

Health & comfort : A reflection on the choice of furniture and the configuration of the premises (cupboards, tables of exchange ...) was carried out jointly between the commune and the master work in ergonomics. The OSB furniture has been integrated into the building in a perspective of homogeneity and ergonomics. All the furniture was exchanged between the elected municipal officials, the nursery assistants, the technical services of the city and the architect; The objective being to benefit from aesthetic furniture, ergonomic, solid, secure, and finally easy to maintain.

Acoustic comfort : The ventilation room was placed next to the waste room, thus avoiding the noise nuisance of the ventilation.

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