Education and Leisure Hub of "the 2 Sources"

by Benjamin Boyaval / 2019-05-13 18:51:03 / France / 4794 / FR

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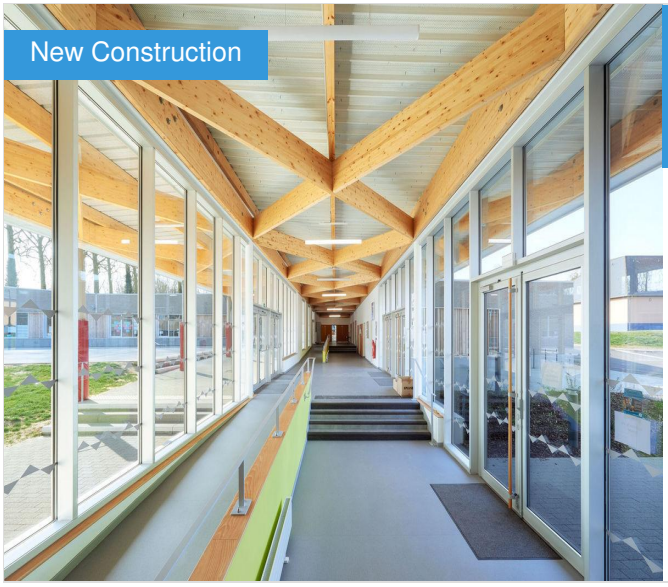
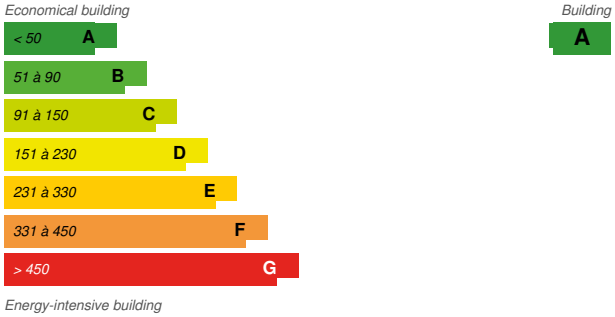


Primary energy need :

28.6 kWhep/m².an

(Calculation method :)

ENERGY CONSUMPTION



Building Type : Preschool, kindergarten, nursery
Construction Year : 2018
Delivery year : 2018
Address 1 - street : rue des platanes 62 810 BERLENCOURT LE CAUROY, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 2 571 m²
Construction/refurbishment cost : 3 949 348 €
Number of Children : 405 Children
Cost/m2 : 1536.11 €/m²

Certifications :

Bepos 2013

General information

This school group comes from a Concentrated Pedagogic Group (RPC). It includes 12 classes and a multi-home center, in MH perimeter.

It is part of a sustainable development approach and is exemplary. For this, a positive energy project (BEPOS) has been developed. The child, at the center of the concerns, dictated the layout of the spaces and their ambiances. The project represents a symbol of modernity, sustainability and educational and cultural openness.

The building takes the form of a ribbon walk-in, which marries the uneven ground. The roofs are vegetated to integrate the project into the landscape and create a "fifth facade" in the extension of the meadow. This bias allows a harmonious cohabitation with the neighboring Château du Cauroy. The facades are adorned with light-colored bricks and wood. In order to achieve the BEPOS performance, a wood boiler, a wooden silo and photovoltaic solar panels are installed on the operation.

Sustainable development approach of the project owner

The constuction manager follows a sustainable development approach - HQE program without certification.

The focus has been on: Sustainability, maintenance, maintenance and operating costs. The program has induced a bioclimatic architecture relayed by major technical equipment: wood boiler, wood silo and photovoltaic solar panels. The wish of construction manager has been to achieve an exemplary building.

Architectural description

The architecture of our building marries the plot and plays with differences in the level of the ground to minimize its impact in the site from the departmental road. The development of the planted alley leading to the castle is thus preserved while signifying the project since the hamlet. In this way, architectural devices allow to collect and ensure differences in soft levels and conducive to sensory and motor experiences.

Open to the outside, these transitions held and varied frame the landscape, punctuate the course and open the culture to nature.

The project therefore aims to assert its status of intercommunal equipment at the scale of the territory while ensuring a harmonious integration into the local landscape, concerned about the built and plant heritage that surrounds it.

The project is composed of three large entities (a kindergarten, an elementary school and a multi-home), it is necessary to make them clearly legible from the public space, as well in their functioning as in the links which they maintain between them .

This translates into their clear positions in the overall device. Located in the direction of the slope, the two schools are juxtaposed in the wings North and South while the multi reception and the restoration are signified on the service.

If you had to do it again?

The undersides in steel tray would have required a special finish so that the fastening screws are not visible. However, all the actors of the project had a decisive role in the realization of the operation. It is with enthusiasm that we would take part again in the experiment.

See more details about this project

https://www.bplusbarchitectures.com/projets/les-deux-sources

Photo credit

Jonathan Alexandre Photographer

Stakeholders

Contractor

Name : Communauté de communes des Campagnes de l'Artois
Contact : Pascaline Duquesne - 03 21 22 64 13 - pascaline.duquesne@campagnesartois.fr
http://campagnesartois.fr/

Construction Manager

Name : BplusB Architectures
Contact : Angélique Sternheim - 03 59 08 69 45 - contact@bplusbarchitectures.com
https://www.bplusbarchitectures.com/

Stakeholders

Function : Assistance to the Contracting Authority

MPI Développement

Jean Pierre Cahon

http://www.mpideveloppement.com/
MASTER

Function : Other consultancy agency

HDM Ingénierie

Christophe Carrette - 03 20 41 54 74 - ccarrette@hdm-ingsa.fr

https://hdm-ingsa.fr/

BET TCE

Function : Others

Atelier Altern

Aurélien Zoïa - 03 20 91 75 78 - contact@atelieraltern.com

https://www.atelieraltern.com/

Grounds

Function : Company

FIEDOR

M. Fiedor - 03 21 48 42 42 - Direction.FIEDOR@wanadoo.fr

GO extended

Function : Company

DELIGNY

M. Guy Deligny - 03 21 03 12 00 - contact@guy-deligny.fr

Exterior carpentry

Function : Company

SUNELIS

M. Jérome Borne - 03 20 82 63 99 - contact@sunelis.com

http://www.sunelis.com/

Solar panels

Contracting method

Separate batches

Type of market

Table 'c21_maroc.rex_market_type' doesn't exist

Energy

Energy consumption

Primary energy need : 28,60 kWhep/m^2.an

Primary energy need for standard building : 107,70 kWhep/m^2.an

Calculation method :

Breakdown for energy consumption : Heating 28% ECS 13% Lighting 4% Breakdown 8% Photovoltaic 47%

Real final energy consumption

Final Energy : 4,70 kWhef/m^2.an

Envelope performance

Envelope U-Value : 0,26 $W.m^{-2}.K^{-1}$

More information :

Wall composition:
-Face: concrete + 20cm of rock wool in itite + air knife + brick full up = 0.19 w / m².k
-plancher TP: 20cm concrete + 18.5 cm expanded polystyrene under slab up = 0.12 w / m².k
-toiture: steel tray + 1 bed of insulating mineral wool 6cm + a second bed of insulation 29cm expanded polystyrene on roof up = 0.10 w / m².k
aluminum double glazing argon uw <1.5 and sw <0.4 and solar control for south facades uw <1.5 and sw <0.3
-Heavy intimacy.

Building Compactness Coefficient : 2,68

Indicator :

Renewables & systems

Systems

Heating system :
- Wood boiler

Hot water system :
- Individual electric boiler
- Wood boiler

Cooling system :
- No cooling system

Ventilation system :
- Double flow heat exchanger

Renewable systems :
- Solar photovoltaic
- Wood boiler

Renewable energy production : 80,00 %

https://www.construction21.org/france/data/sources/users/14147/energies-renouvelables.docx
PHOTOVOLTAIC SOLAR ROOF PANELS, WOOD PELLET BOILER.

Smart Building

BMS :
The installation is equipped with an integrated web server which allows access, via a simple web browser, to all the information of the installation. The exploitation, but also the setting up are carried out online, from simple HTML pages, without downloading of a software of exploitation on the computer station:
- remotely, in ADSL or RTC,
- locally, via the RJ45 connection of the Ethernet port.

Alarms are broadcast periodically and / or on a change of state via several media (PSTN, ADSL, GSM, Ethernet).
Alarms can be sent via e-mail to a monitoring or supervisory PC, or via SMS (with the optional GSM extension) on a mobile phone depending on each user's on-call schedule.
Depending on the level of access of the user, directly online via a web browser, it is possible to act as a remote control and remote control to change the values of the data and control live installation (rescue actions, interactivity, taking in hand fast ...).
The installation allows the simultaneous connection of several users locally and / or remotely, the management of their directory and access rights to the various functions. Four levels of access to functions can be defined and the display and control of data can be customized for each user. Its compatibility with the Modbus protocol (series or tcp), the opening of its protocol to the world of supervision, its link with access control systems, electrical meters allow the system to overcome the communication barriers and become the best unifying element of the installation.
The instantaneous values of the site can be consulted at any time. Remote control or remote control can be operated remotely on this data. For this, the installation provides several tools:
The states display the values of the installation in the form of a list and animated symbols and make it possible to act as remote control or remote control on these points. The user can select the displays and view all site data in a fast and user-friendly way.
-The Synoptics offer a simple navigation and allow to visualize the whole site, at a glance. They are easily built thanks to a library of objects provided and the ability to download its own images.
Thanks to its large storage capacity, the installation offers several types of history:
Alarms and timestamped events are archived and accessed from the Event Log. The Outstanding Journal displays the alarms still present on the site.
-The data is plotted and rendered in the form of curves, viewable from the graphs (exportable in Excel format).
Each screen is printable and can be archived in different formats, the installation also allows to export the raw data in Excel format for more elaborate mathematical treatments. Regularly, the user can publish a complete report of the exploitation of the site, or to receive it by e-mail in an automated way
It is possible to organize the "remote diagnosis" of equipment by setting up preventive alarms (monitoring the number of faults, operating times, etc.), by taking control very quickly, remotely, without specific software, and thus avoiding costs. shutdown.
In addition, the installation offers a maintenance aid thanks to its ability to integrate in its ftp server the documentation files of the various equipment of the installation.
The installation, from option +, integrates a script generator which allows to program its own automatisms in advanced language. Without compilation, online and with a simple browser, it is possible to set up powerful automation functions and change the installation: automatic reaction and security, interactivity between data, customization of chain actions ...

Smartgrid :
Local production of energy by photovoltaic solar panels (288) installed on the roof with a total power of 86.4 KWc and an annual production of 75554 kWh. Energy not consumed by the building is reinjected into the network (resale).

Environment

Urban environment

Land plot area : 10 070,00 m^2

Built-up area : 2 571,00 %

Located on a hilly meadow, bordered by a majestic alignment of plane trees, the pole of education and leisure takes its place below the street of the Platanes and turns towards the hamlet which borders the castle of Cauroy. Implanted in the direction of the slope the two schools are juxtaposed in the wings North and South while the multi-reception and the restoration are signified on the service.

A common forecourt serves the three entrances.

Parking is arranged along the street of Platanes

Products

Product

Lindner & Sommerauer wood pellet boiler and pellet silo 2 planes

Lindner & Sommerauer

Guillaume Meneboode 06 45 79 94 71

http://www.ls-france.fr

Product category : Génie climatique, électricité / Chauffage, eau chaude

Pellet boiler connected to a storage silo. The fuel supply to the boiler is via a flexible screw.

This product has been well accepted by the users and the community of communes of the 2 Sources

SOLARWORLD SunModule 300 Wc

SOLARWORLD SunModule 300 Wc

Jérôme Borne 06 27 50 33 16

http://www.sunelis.com

Product category : Génie climatique, électricité / Chauffage, eau chaude

Installation of 188 photovoltaic modules on the roof of the building. The electricity produced is consumed on-site and surplus and sold back to the energy supplier.

This product has been acclaimed by the community of communes of 2 Sources, which has never been overlooked.

Costs

Construction and exploitation costs

Reference global cost : 1 450,00 €

Reference global cost/Children : 1450

Total cost of the building : 3 949 348 €

Additional information on costs :
WOOD BOILER: 64 083.21 € excl tax
SOLAR PANELS PHOTOVOLTAIC: 135 796 € HT

Energy bill

Forecasted energy bill/year : 12 127,00 €

Real energy cost/m2 : 4.72

Real energy cost/Children : 29.94

Health and comfort

Comfort

Health & comfort :

Realization of a dynamic thermal simulation of the building with the software pleiades which allows the calculation of the temperatures in summer and winter piece by room taking into account the internal and external contributions, the ventilation and the occupation of the premises.

Zoned

Temperature

Minimum

(° C)

Average

(° C)

Maximum

(° C)

dining room

14.04

20.07

30.03

classse elementary 01-04

15.79

20.01

26.76

elementary class 05-06-07

16.00

19.90

26.71

elementary classes 08-09

16.00

20.04

26.62

teachers room + razed + direction

16.00

19.99

27.90

teachers room + razed + direction

16.00

19.99

27.90

cloakroom-tisanerie-office

15.73

19.97

25.94

extra-curricular space

15.94

20.01

26.61

kindergarten class 01-02

15.92

20.02

26.57

nursery classes 03-04

15.96

20.02

27.23

dormitory

15.55

19.70

25.36

motor room

15.91

20.11

27.44

awakening room

15.82

20.35

28.20

circulation

16.13

20.12

24.53

health

16.26

19.86

24.23

boiler room

14.62

18.72

25.40

cooking preparation

14.01

19.20

26.50

small space

15.73

20.33

29.98

meternelle class 05

16.00

20.12

27.49

welcome gallery

16.00

19.78

28.54

Daylight factor : Réalisation d'une étude FLJ sur tous les locaux a occupation normale (hors passagère) afin de s'assurer d'une quantité suffisante de lumière naturelle dans les locaux (logiciel dial+): classes 1-44.4 /salle de restauration6 /classe élémentaire 5-94.3

Contest

Reasons for participating in the competition(s)

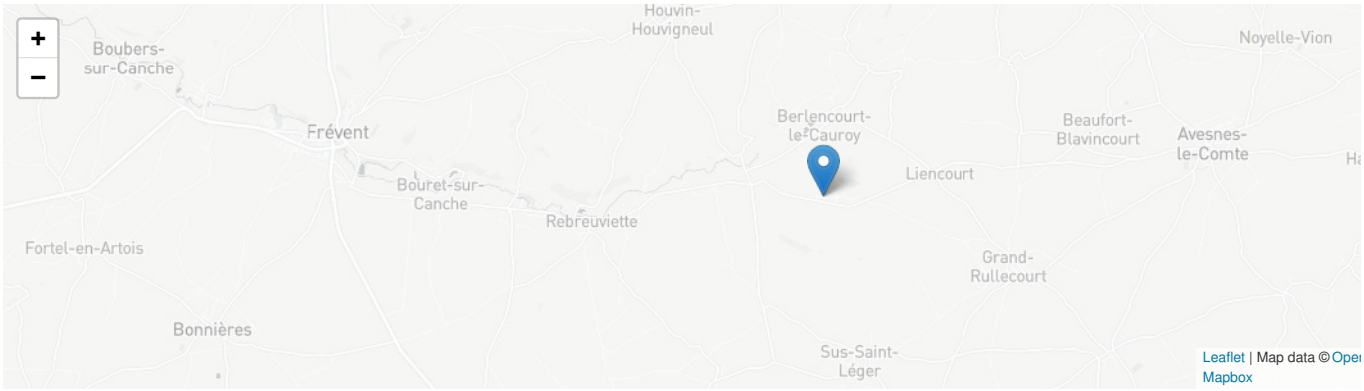
- Intercommunal equipment BEPOS
- Perennial materials
- Bioclimatic architecture
- Wood boiler, wooden silo
- Solar photovoltaic panels

Building candidate in the category

Energie & Climats Tempérés

Prix du public

Prix des Etudiants



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