Sport'Co sports complex in Beaucouzé

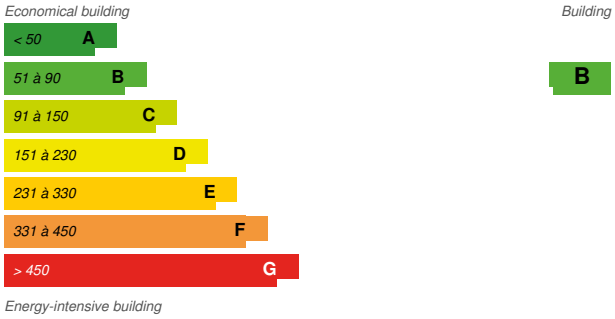
by Camille FAYET / 2019-05-13 16:54:57 / France / 9056 / FR

Primary energy need :

80 kWhep/m².an

(Calculation method : RT 2012)

ENERGY CONSUMPTION



Building Type : Indoor gymnasium, sports hall, stadium
Construction Year : 2019
Delivery year : 2019
Address 1 - street : Site de la Haye 49070 BEAUCOUZé, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 4 174 m² Autre type de surface nette
Construction/refurbishment cost : 6 000 000 €
Cost/m2 : 1437.47 €/m²

Proposed by :

General information

Called Sport'Co, the Beaucouzé sports complex (49) opened its doors in early March 2019. In many ways, this positive-energy public school illustrates the right balance between fundamental values and innovative ideas. While meeting the functional requirements of a structure dedicated to team sports, it is characterized by exemplary technical and economic performances:

- Wood structure, dry chain
- One energy: electricity
- Heating and domestic hot water with heat pumps
- Solar air collectors for preheating fresh air
- Natural ventilation controlled
- Double flow ventilation with high recovery efficiency
- Radiant ceilings
- Optimized and controlled natural lighting
- Assigned and dimmable artificial lighting
- Building technical management for control, metering and maintenance of facilities

- Recovery of rainwater for the supply of all WCS

Sustainable development approach of the project owner

The municipality of Beaucouzé wanted to make available to its sports associations and public / private schools a new sports hall on the site of The Hague. Equipment that aims to reinforce the existing offer (sports plateaus Aubineau site) and anticipate the disappearance of tennis courts Hautes Roches.

Committed to sustainable development, the municipality has integrated several environmental objectives into its program relating to eco-management, eco-construction, comfort and health. Among the priorities: thermal comfort, energy management and maintenance / maintenance as well as the concept of insertion in the site.

From a purely functional point of view, the multisport hall with a free height of 9 meters, allows to host handball competitions at the regional level and adapts to the practice of basketball, tennis, volleyball and badminton . Another room is reserved for basketball only.

Architectural description

Implantation

It was proposed to "sit" the new Sports Hall against the north facade of the aqua playful building Couzé'o. This stake of implantation constitutes a choice of conception and of major integration, namely:

- Strengthen the opening of all buildings of the equipment on the public domain
- Provide an obvious identification of each equipment
- Develop a central landscaped area

Lobby

The foyer is both an essential architectural and functional element. It is the "communicating" volume, open on the public space and the "pivot", at the interface of multi-sports halls , badminton and basketball. It allows to clearly distribute these three major halls, on both sides, while dissociating the sports / public flows.

Consistency with the existing

The proposed architecture is reflected in three pure volumes, articulated around the hall, with coherent and respectful volumes of the buildings COUZE'O (center aqualudique) and DOMINO (room desports).

A first volume, including hall-basket room, facing the main entrance of the site. It is the identifying and federating element with Couzé'o. Federator by under basement shale masonry, in the extension of the facade of Couzé'o.Identifying by the tension of the awning which accompanies the elevation of the hall and thus provides the composition, the dynamic movement of this new Hall.

Kinetic treatment

A second volume, including the multi-sports hall, anchored to the field, opening widely to the north beyond the stands dedicated to the public. This volume accompanies the inflection of the road of the Houssaye at the entrance of town by a kinetic treatment. They are deflectors channeling the natural light in the room, offering by their treatment with variable geometry, the image of the facade in motion.

A third volume, which primarily houses badminton, completes the first two volumes and strengthens the overall composition. The trapezoidal opening energizes the facade and accompanies the visual break of the base with the high defaults treated with colored zinc.

Perennial materials

Perennial materials, with a strong local reference, accompany this architectural design:

- the basement in shale masonry
- the glazed facade of the hall, shades of blue in reference to the color of the logo of the city of BEAUCOUZE
- zinc coating, bark-copper hue.

The evidence of operation

The architectural coherence is also reflected by the rationality, the evidence of the operation. From the forecourt, the lobby immediately serves the two gyms, while offering a broad view of them. The public accesses the stands directly, while the athletes take an access that leads directly to the locker room.

A passive building

With an obvious and dynamic architecture, the durability of the materials, the functional rationality, we propose a passive building. This behavior is achieved thanks to a high-performance envelope, simple radiant heating techniques and intelligent management of air exchange with heat recovery and recovery of external inputs.

See more details about this project

https://www.construction21.org/france/articles/fr/green-solutions-complexe-sportif-Soprt-Co-a-Beaucouze.html

Photo credit

Stakeholders

Contractor

Name : Mairie de Beaucouzé
http://www.beaucouze.fr

Construction Manager

Name : CRR ARCHITECTURE
Contact : Jean-Pierre Rambourdin
http://crr-architecture.com/fr/

Stakeholders

Function : Assistance to the Contracting Authority

CERUR

https://www.cerur-reflex.org/cerur_expertises__programmation-architecturale-et-urbaine.htm
Assistance for project management

Function : Thermal consultancy agency

CRR Ingénierie

http://crr-architecture.com/fr/projets/
Fluids, thermal and OPC

Function : Other consultancy agency

Cabinet Gousset

https://www.gousset-ingenierie.fr
Economist

Function : Other consultancy agency

Sylva Conseil

https://www.sylva-conseil.fr
Wood structure

Function : Other consultancy agency

Even structure

http://www.even-structures.fr/accueil/
Concrete structure

Function : Other consultancy agency

Salto Ingénierie

http://www.salto-ingenierie.com
Acoustic

Energy

Energy consumption

Primary energy need : 80,00 kWhep/m^2.an

Primary energy need for standard building : 120,00 kWhep/m^2.an

Calculation method : RT 2012

Breakdown for energy consumption : CH = 9 kWh / m² ECS = 16 kWh / m² ECL = 7.7 kWh / m² AUX = 4 kWh / m² EQUIP = 3.5 kWh / m²

Real final energy consumption

Final Energy : 40,00 kWhef/m^2.an

Real final energy consumption/m2 : 40,00 kWhef/m^2.an

Envelope performance

Indicator : I4

Air Tightness Value : 1,00

Renewables & systems

Systems

Heating system :

- Heat pump

Hot water system :

- Heat pump

Cooling system :

- No cooling system

Ventilation system :

- Natural ventilation
- Nocturnal ventilation
- Double flow heat exchanger

Renewable systems :

- Solar photovoltaic
- Heat pump

Renewable energy production : 115,00 %

1,200 m2 of photovoltaic panels allow the production of 115% of the total energy needs of the complex.

Solutions enhancing nature free gains :

capteurs solaires à air, bioclimatique, surisolation

Smart Building

BMS :

GTB (technical management of the building) , metering, steering and maintenance management

Environment

Urban environment

The implementation perfectly completes the development of the Haye site between Couzé'o and the Houssaye road.

Closed to the west under the prevailing winds, the building opens widely on the village side inviting the inhabitants to the collective sport practice.

The project is part of a landscape site open to the south-west to a very gentle hill line, to the south a tree edge provides a "backstage" equipment and spaces Couzé'o. The north and east of the site mark the current limit of urbanization.

The current site presents to date a voluntary composition plan that strongly integrates active modes of travel. Bike paths and pedestrian paths are very present and structuring in the reading of spaces.

Landscapes and tree and grass plantations reinforce this composition. Parking areas are present but not predominant in the perception of the site.

Landscape integration is at the heart of the design process of our project, the composition of the mass plan is based on the scale and structure of the rest of the site to join and complement the overall composition soberly.

The plantations of shrubs punctuate the space departure and other following lines parallel to the axes of composition of the site. The alignment of trees draws a limit to the north that "shelters" the space opposite the road. He leads the way to the building and recalls the south side of the site.

Products

Product

Rainwater recovery system

Murdeaux

https://www.murdeau.bzh

Product category : Aménagement extérieurs / Gestion des eaux pluviales

Regional production and feeding of 100% of toilets in rainwater.

Well integrated into the structural frames of sports halls

Costs

Construction and exploitation costs

Total cost of the building : 6 000 000 €

Subsidies : 645 325 €

Carbon

GHG emissions

GHG in use : 2,00 $KgCO_2/m^2/an$

Methodology used :
RT calculation

Contest

Reasons for participating in the competition(s)

Environment's respect
Sobriety

- Design based on the Négawatt scenario (sobriety, efficiency, renewable energies)
- A building RT 2012 desired: a passive building proposed and soon positive energy
- Heating at 12 ° C in sports halls
- No hot water in the locker room sinks
- Rainwater recovery for all Wcs
- Establishment of a GTB to heat, illuminate and ventilate to just the necessary levels
- Mechanical ventilation only when natural ventilation is not possible

Efficiency

- High performance envelope (27 cm LR)
- High performance equipment:
- Natural ventilation thanks to external air intake grilles controlled according to the indoor and outdoor temperatures (COLT system)
- Double flow ventilation with an air sensor system for preheating the air in winter (Aérollagg system)
- Intelligent ventilation control via a GTB with priority to natural ventilation
- Natural light well SOLARSPOT
- 3 air / water PACs that generate low temperature heating and DHW for changing rooms
- Recovery of EP for sanitary
- BEPOS level achieved with the rental of the roof for the installation of photovoltaic panels

- Use of renewable energy: air, water and sun / light

renewable

- Preheating the fresh air of a DF unit with air solar collectors
- Buildings designed for photovoltaic installations
- Natural ventilation controlled

Quality of life

Winter thermal comfort:

- Comfort temperature 12 ° C sports halls and 19 ° C elsewhere
- Low temperature radiant ceilings
- Double-flow ventilation (milk preheating by Aérollagg system)

Thermal comfort between seasons and summer

- Natural ventilation all-weather operation controlled via GTB (colt system)
- Unloaded building discharge (colt system, free cooling)

Visual comfort:

- FLJ studies for all premises
- Glazing polycarbonate glazing with anti-glare treatment
- Sun protection minimizes direct radiation on all facades
- Skylight in the locker room
- Modulation of artificial lighting according to natural intake and practiced sport
- Implementation of high quality LED luminaire to avoid glare

Acoustic :

- Integration of technical equipment in closed or protected premises
- Technical premises adjacent to buffer rooms
- Acoustic treatment in all spaces (walls, ceilings)

Services :

- Space of conviviality with a bar
- Meeting room
- Infirmary
- Gym: party room

Economic performance

- High performance building for a zero energy bill (after photovoltaic installations)
- Choice of local actors mainly for design and implementation

Responsible management

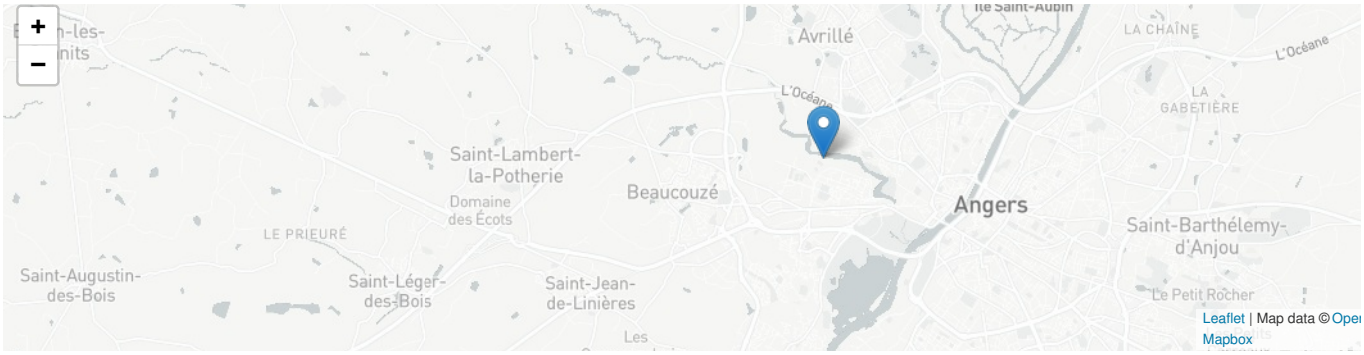
- Internal management at the MOE: CRR Architecture and CRR Engineering
- Presentation of STD and FLJ calculations at MOA in APS and APD: decision support
- Monitoring, performance management and maintenance via GTB

Building candidate in the category

Santé & Confort

Prix du public

Prix des Etudiants



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