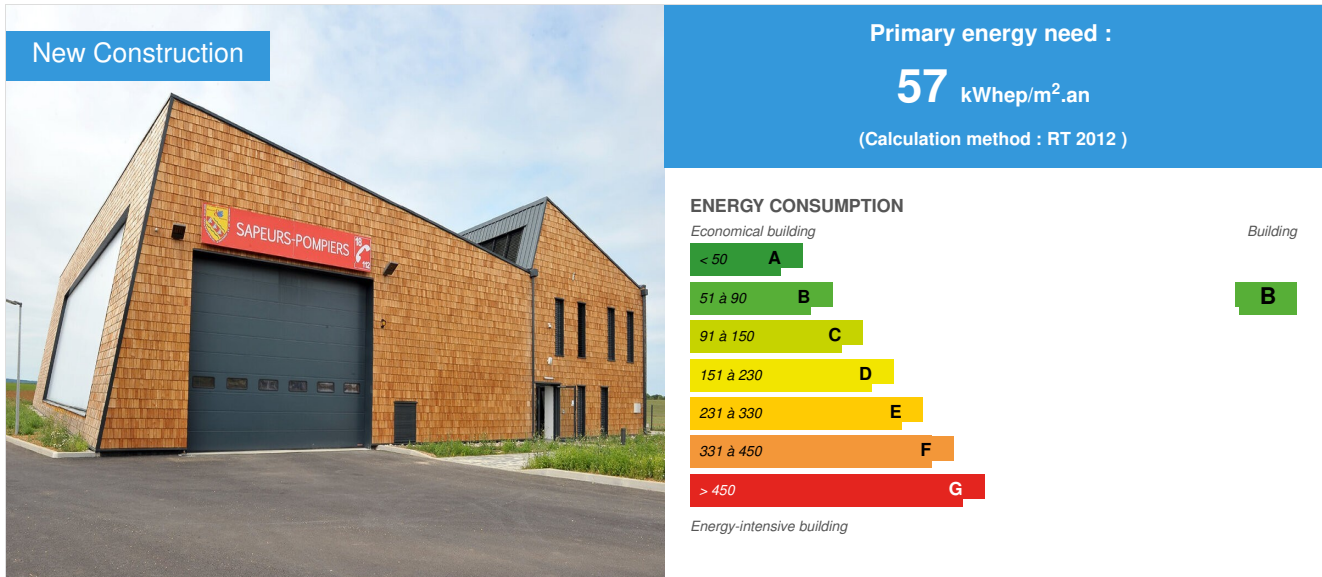


Fire and rescue center

by Marie-Laure Aubriot / 2019-08-27 14:22:28 / France / 4718 / FR



Building Type : Other building
Construction Year : 2017
Delivery year : 2017
Address 1 - street : Route D674 54170 COLOMBEY-LES-BELLES, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 1 132 m² SHON RT
Construction/refurbishment cost : 1 508 719 €
Cost/m2 : 1332.79 €/m²

General information

- **Winner of the Envirobat Grand Est Prize 2018**
- Passive positive energy building (photovoltaic panels)
- Bio-based materials: larch wood structure, **straw insulation**, cellulose wadding and wood wool, cladding in untreated larch tavaillons
- Bioclimatic design
- Rainwater harvesting for firefighter training
- Wood pellet boiler
- Parking area permeable to water thanks to perforated concrete slabs filled with gravel
- Environmental approach (self-declaration): PassivHaus type

Sustainable development approach of the project owner

PassivHaus-type passive specific study by Othelio in addition to the RT2012 study. From the call for tenders, choice of biobased materials specified in the business consultation (straw, wood wool, cellulose wadding, etc.).

Architectural description

The building is designed according to a bioclimatic form. The openings located to the south and west of the building are arranged to bring back heat in winter and protect the interior from the sun in summer. The project is conceived as a piece of landscape favoring a friendly and balanced relationship with nature. The architectural syntax of the project is based on the notion of dialogue:

- Dialogue between two materials, smooth texture (polycarbonate) and relief (larch shingle).
- Dialogue between opaque (shingle walls) and transparency (glass and polycarbonate).

The shape of the building is heliotropic, seeking the natural energies available on the site (solar gain) and self-weighting by the ruptures of the roof line breaking the massive aspect of the functions. The choice of larch shingles is part of an approach that is both sustainable through the use of the wood sector but also the search for a unique relationship that the shingle maintains with natural light creating shade and counter-shade on the facades. , so as to break the monolithic aspect of the building. The windows will be in wood-aluminum (aluminum on the outside). The shingle is deployed on the facades confirming the formal rigor of the project.

The roof will be treated with a ribbed steel deck. The architectural aspect of the project is part of both the environmental and sustainable approach implemented by simplifying the number of materials used by favoring local sectors and natural materials. However, the proposed architecture frees itself from a retrograde formal approach by projecting the building into the space of its time. It is about valuing and using materials (wood, brick), techniques and traditional methods of implementation in a contemporary approach.

See more details about this project

<http://www.lqe.fr/realisations-exemplaires/fiches-de-batiments-lorrains-de-qualite-environnementale/1-realisations-exemplaires/2532-construction-d-un-centre-d-incendie-et-de-secours-a-colombey-les-belles>

Photo credit

Fred HURST

Stakeholders

Contractor

Name : SDIS 54

Contact : erwan.gueguen (a) sdis54.fr

Construction Manager

Name : FFW

Contact : ffw.architecture (a) gmail.com

Stakeholders

Function : Assistance to the Contracting Authority

Ace BTP Lorraine

Function : Other consultancy agency

OTE Ingénierie, Otelio

Function : Environmental consultancy

Bureau de contrôle : Socotec

Function : Company

TRB, CLM, Sertelet, Soprema, Jean Albert, Hunsinger, Dessa, Baldini, Carrelage & Déco, Rousseau, Idex, Sodel

Energy

Energy consumption

Primary energy need : 57,00 kWhep/m².an

Primary energy need for standard building : 84,00 kWhep/m².an

Calculation method : RT 2012

Real final energy consumption

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

Environment

Urban environment

- Untreated larch cladding.
- Height limited to the minimum little shade cast on the neighboring plot.
- Integrated building on a small plot which preserves the neighboring agricultural land as much as possible.
- Limitation of the heating of the environment (revegetation, light color, etc.).
- Light color on the facade and roof: light gray.

Products

Product

Straw insulation in prefabricated box and facade in larch tavillon traditional installation

Product category : Second œuvre / Cloisons, isolation

From the call for tenders, choice of biobased materials specified in the business consultation (straw, wood wool, cellulose wadding, etc.)

Costs

Construction and exploitation costs

Total cost of the building : 1 696 835 €

Contest

Reasons for participating in the competition(s)

Local channels and bio-sourced materials were favored for the construction of the building: wooden frame, caissons filled with straw for insulation, facades covered with larch work, wood wool and cellulose wadding.

The openings of the building located to the west and south allow to bring heat in winter, and protect it from the sun in summer. The large bay window on the 1st

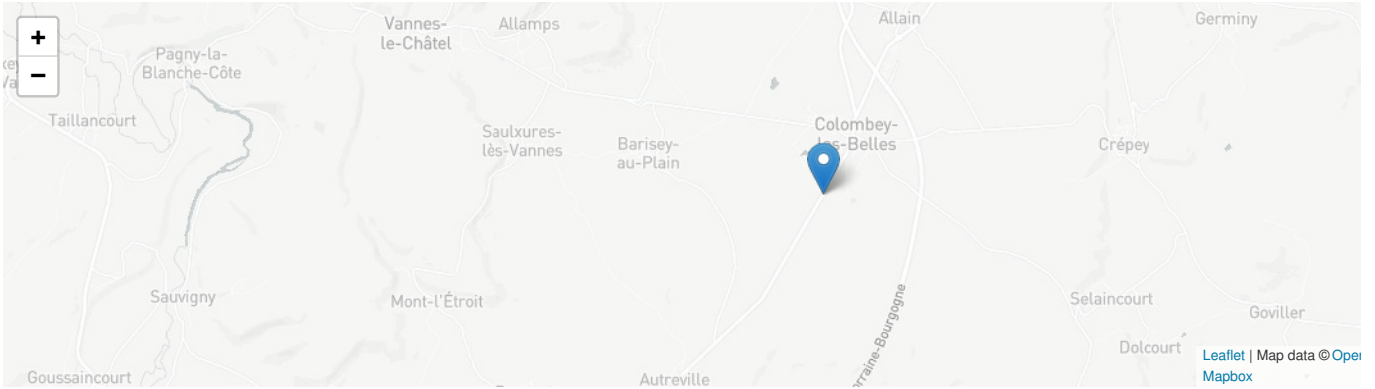
floor also allows this heat contribution. In addition, 56m² of photovoltaic panels on the roof of the shed allow a peak production of 9000W, and the surplus of energy is then sold back to the electrical grid.

The building is adapted to the specific needs of users. Rainwater is recovered for firefighter training as well as vehicle maintenance. On the electrical side, almost all the lights are LED with automatic presence detectors, which allows to avoid forgetfulness during departure in intervention.

Building candidate in the category



Energie & Climats Tempérés



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