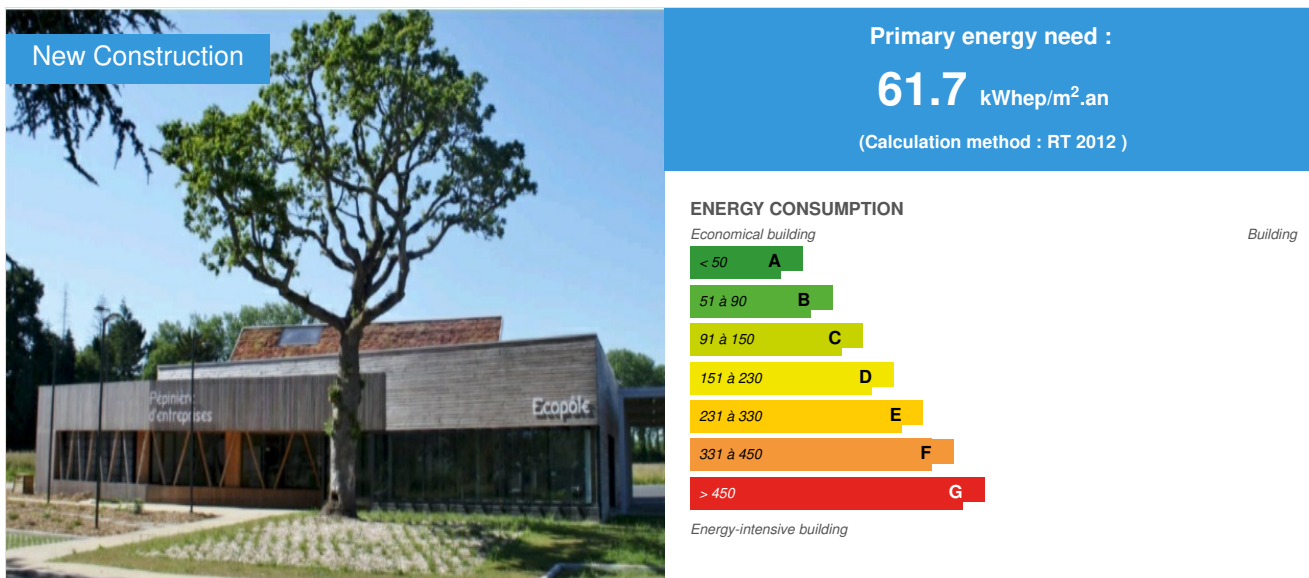


Ecopôle and Business incubator

by Rémi Boscher / © 2017-04-12 12:12:44 / France / © 3066 / FR



Building Type : Other building
Construction Year : 2013
Delivery year : 2015
Address 1 - street : Colguen 29900 CONCARNEAU, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 530 m².SHON
Construction/refurbishment cost : 437 272 €
Cost/m2 : 825.04 €/m²

Proposed by :



BATY.LAB

General information

The project carried out by Concarneau Cornouaille Agglomération (CCA) concerns a pilot building designed around two complementary programs: an ecopole and a business incubator. The project develops simple and innovative environmental strategies for sustainable construction.

Sustainable development approach of the project owner

The objective of the ecopole is to promote eco-construction and eco-housing, different spaces have been developed accordingly: - a reception, information and exhibition space around ecological construction; - a conference room; - a covered outdoor area of 80 m² (for practical training and demonstrations). The organization and management of the ecopole were entrusted to the association Approach Eco-Habitat.

Architectural description

The constructive principle chosen for this project is the wooden framework with a distributed insulation in hemp wool And wood. Only the roof is insulated in rock wool. The latter harbors a vegetation and Solar thermal and photovoltaic panels. The whole building is built on the ground.

See more details about this project

http://www.reseau-breton-batiment-durable.fr/retour_experience/la-pepiniere-dentreprises-ecopole-de-concarneau

Stakeholders

Stakeholders

Function : Contractor

Concarneau Cornouaille Agglomération (CCA)

02 98 97 71 50

<http://www.concarneau-cornouaille.fr/>

Project management

Function : Construction Manager

ENO Architectes

enoarchitectes@orange.fr

<https://www.enoarchitectes.com/accueil>

Subject mastery

Function : Designer

ENO Architectes

enoarchitectes@orange.fr

<https://www.enoarchitectes.com/accueil>

Architect

Function : Structures calculist

S.B.C.

02 98 10 35 81

Study of the structure

Function : Other consultancy agency

ATIS

02 98 46 32 19

<http://www.atis.bzh/>

Study of fluids

Function : Structures calculist

Akoustik

tadhp@free.fr

<http://www.akoustik.fr/ingenierie.php>

Acoustic study

Function : Others

Apave

<http://www.apave.com/nous-decouvrir/le-groupe/metiers/les-metiers/batiment.html>

Control and Security

Energy

Energy consumption

Primary energy need : 61,70 kWh/m².an

Primary energy need for standard building : 77,00 kWh/m².an

Calculation method : RT 2012

Breakdown for energy consumption : The phpp software was used to passively design the ecopole part of the project: Heating needs: 12.6 kWh/m².an
Dynamic thermal simulation displays 22.9 kWh / m².an of heating need for building workshop included

Envelope performance

Envelope U-Value : 0,35 W.m⁻².K⁻¹

More information :

- Exterior walls: (perforated wood paneling / rain screen / bracing / wood-hemp wool between framing / wood wool / hemp / gypsum board), thickness 14.5cm / 8cm, U = 0.164 W / m².K
- Walls overlooking the workshops: (wood wool-hemp between frames / wood wool / hemp / gypsum board), thickness 4,5cm / 8cm, U = 0,162 W / m².K
- Concrete walls overlooking the workshops: (wood wool-hemp / concrete sail), thickness 6cm, U = 0,461 W / m².K
- Heat sensor walls: (perforated siding / cinder block / wood wool / hemp / vapor barrier / facing), thickness 14cm, U = 0.243 W / m².K
- High floor overlooking the exterior: (vegetated roof / waterproofing / rockwool / rockwool second layer
Crossed / steel tray or wooden plate on timber frame), thickness 26cm, U = 0,147 W / m².K
- PassivHaus top floor: (vegetated roof / waterproofing / mineral wool / steel tank / rockwool / false ceiling), thickness 26cm / 3cm, U = 0.1 W / m².K
- Low floor on earth: (concrete slab / rock wool / wood floor finish), thickness 18cm, U = 0,122 W / m².K
- Internal partitions: (gypsum board / wood wool-hemp / facing type BA13), thickness 6cm, U = 0,64 W / m².K
- Joinery: (mixed wood / aluminum with thermal break, double glazing argon filling), thickness 4cm / 18cm / 4cm + 4cm, Uw = 1,4 W / m².K
- Roof frames: (PVC with Velux thermal bridge break for flat roof), Uw = 1.4 W / m².K

Indicator : n50

Air Tightness Value : 0,60

Renewables & systems

Systems

Heating system :

- o Others
- o Others
- o Wood boiler

Hot water system :

- o Individual electric boiler
- o Solar Thermal

Cooling system :

- o Others

Ventilation system :

- o Natural ventilation
- o compensated Air Handling Unit

Renewable systems :

- o Solar photovoltaic
- o Solar Thermal
- o Wood boiler

The roof accommodates a vegetation and solar thermal and photovoltaic panels.

Smart Building

BMS :

All the technical components are controlled by a centralized technical management and the hall hosts a teaching screen allowing to follow in real time

Environment

Urban environment

According to the Concarneau PLU, the area of the project is classified in zone 1AU1, intended to receive handicraft, industrial and commercial activities incompatible with the habitat. The location of the project in this area leads to special requirements, particularly for stormwater management. Moreover, an educational garden has been designed with the aim of being a place of information and advice to the realization of a garden. Created by Anne Lavorel, a tréguinoise landscaper, he is an assistant to imagine his garden, to choose and associate plants, to think about landscaping ... Six illustrated panels are available for free reading and provide valuable tips for designing an ecological and sustainable garden.

Products

Product

Bioclimatic greenhouse

SOPREMA + BARILLEC

travaux-vannes@soprema.fr // contact@barillec.fr

<http://www.soprema-entreprises.com/vannes.html> // <http://www.barillec.com/>

Product category :

The function of the bioclimatic facade is to preheat the fresh air to be brought to the premises. The new air is heated in the double skin before being sucked in by the extraction fans. In summer, the canopy has on the exterior façade openings that can be opened manually to evacuate the calories directly to the outside and thus avoid overheating.

The air intake is provided by ventilation openings or grilles in all the premises. Stale air is extracted through extraction grilles located on the ceiling of the premises. The extraction grids are then connected to an extraction box by a set of steel ducts running through the false ceilings. Extraction is carried out by natural pulling thanks to the mechanical extractors placed on the roof. In case of insufficient flow in wind too low, a mechanical device allows to increase the flow.



Costs

Construction and exploitation costs

Cost of studies : 193 060 €

Total cost of the building : 1 656 617 €

Health and comfort

Water management

A 10 m³ tank was installed. The recovered water is used for the maintenance of green spaces, the feeding of the hose of the sanitary ware and the supply of the faucets of the drawings of the workshops and technical rooms.

Indoor Air quality

Air renewal is the main action to ensure indoor air quality. The flows used are those of the Ventilation single flow, they work according to the schedules of occupation of the building. For offices, the flow rates are 5 m³ / h per office, 150 m³ / h for the meeting room, 270 m³ / h for the conference room and the whole ecopole and 80 m³ / h for the whole Of the toilets.

Comfort

Health & comfort : In the office area: LED lighting gives an illuminating power of 8 W / m². Management is at Manual control with dimming of brightness. In the ecopole part, the management is automatic with variation according to the threshold of natural light. The LED lighting has a thermal power of 6 W / m². In the other rooms, the LED lighting emits an illuminating power of 6 W / m² and its management is detection of presence and absence and according to a timer.

Calculated thermal comfort : La simulation thermique dynamique (STD) a permis de vérifier que la puissance disponible par le rafraîchissement du géo-cooling était suffisante pour éviter tout problème de surchauffe dans les bureaux. L'objectif du référentiel technique PEQA concernant

Measured thermal comfort : Pour assurer le confort thermique d'hiver, l'accent a été mis sur la performance de l'enveloppe (Ubât estimé à 0,33 W/m².K sur l'ensemble du bâtiment par la STD), l'intégration d'une serre bioclimatique et d'un mur capteur permettant de préchauffer l'air ent

Acoustic comfort : An acoustic notice in the project phase has been drafted in order to comply with the regulations in force for this type of project and to see proposals for solutions to be implemented.



Life Cycle Analysis

Eco-design material : Eco-construction made of materials such as wood-hemp wool as well as a wooden frame.



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