REGAIN BIS Douvrin

by Yamina BELLAHCENE / 2015-06-16 15:39:42 / France / 12388 / FR

Primary energy need :

46 kWhep/m².an

(Calculation method : RT 2012)

ENERGY CONSUMPTION

Economical building — *Building*

< 50	A	A
51 à 90	B	
91 à 150	C	
151 à 230	D	
231 à 330	E	
331 à 450	F	
> 450	G	

Energy-intensive building

Building Type : Office building < 28m
Construction Year : 2014
Delivery year : 2015
Address 1 - street : 184 avenue de Londres 62138 DOUVRIN, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 250 m²
Construction/refurbishment cost : 570 000 €
Cost/m2 : 2280 €/m²

Certifications :

Bepos 2013

Proposed by :

SEPTENTRIONALE ENTREPRISE DE CONSTRUCTION

General information

The operation involves the construction of an office building at Artois-Flandres Industries Park in Douvrin, London Avenue.

- Plot area: 2000 m²
- Building area: 250 m² (technical facilities and annexes included), 4 office for 2 people, a tearoom, a meeting room.
- Cost of design-build contract: € 620,000 before tax. These costs include: fees, work and operating monitoring for a year.

Best Office Building: Some figures:

- 18 monocrystalline 260 Wp panels; 4390 kWh / year expected for the overall needs of 3800 kWh / year (electro-domestic equipment included);
- Bbio Bbiomax- = 25% (target - 30%)
- RT = PV Cep out 46,3kWep / m².year) or Cep = Cepmax - 39% (target - 40%)
- Cep total off Photovoltaics = 65kWep / m².year) (target: 120)
- Cepenr = - 8kWep / m².year be Cepenr Cepmax = -110%

Internal consumption of electricity produced by photovoltaic panels to cover 100% of the building's electricity needs; Scalable building as will fit in the Third Industrial Revolution in terms of consumption, storage, industrial park in positive and zero carbon energy; Passive and positive energy building envelope according to the RT 2012 (Thermal régulation) ; Use of bio-sourced and made from recycled materials:

- Bio-based materials: wood fiber insulation produced in France, OSB (oriented strand board) type panels of reconstituted wood (German origin), pine wood structure of the Vosges, interior and exterior cladding in raw untreated wood origin France.
- Recycled materials: Wadded panels insulation (Métisse) (produced a few hundred meters from the building)
- Health and Environmental Quality: domestic products eco-labeled (A +) , natural lighting, sun protection and automatic free-cooling following internal and external climatic conditions, etc. ;
- Vegetated roof garden (50 cm vegetable substrate) to recreate the biodiversity of building' footprint;
- Stormwater management: no possibility to infiltrate onsite given the vulnerability of the groundwater table. 3 levels of tamponade: the roof garden, rainwater collection tank (10 m3 for irrigation and flushing toilets) and a large capacity tight tank connected to the public network via a sludge;
- Possibility of extending the construction above the parking (on stilts);
- Measurement campaing of performance and comfort under way : transmit the experience, inform users and professionals.

Sustainable development approach of the project owner

Project REGAIN is an acronym in English of an European program. It can be translated into French by "Reduce Greenhouse Effect through Alternative Industrial Management of territories in North-West Europe"(www.programme-regain.eu)
Research exemplary and demonstrator for the park industries
Innovation and anticipation of future regulations (Thermal regulation RT 2020)
Development of biodiversity (fauna inventory / current flora)
Development of bio-based and recycled materials (Manufacture of insulation Métis on the Park area)
Awareness of actors and students by opening sites (primary to +5) : schools sites, educational sites

Architectural description

Regain (Bis) is a lookout to bring man closer to nature. We were really surprised by the beauty of the site. Even if the Artois Flandres Industrial park is a place that has been recomposed by the hand of man, nature has nonetheless reasserted itself. We were touched by the “poetic” atmosphere; outstanding in a business area. In particular, the channel, the peaceful blue corridor inviting to travel; the wood planted on the nearby slopes, the island in ditches; twin slag heaps, tribute to the mining culture... We wanted immediately to build a panoramic viewpoint to place the visitor at the heart of this landscape. By elevating the building, it was possible to provide future occupants in constant contact with the environment.

On the ground floor, the visitor passes through a carpet of ferns and goes to the front door. A staircase then leads to the heart of the building, the large landing upstairs home serving all living spaces. Conceived as a nave-atrium with a glass roof, this area offers a 360 ° view: the sky and shrubs planted on the roof, as well as the surrounding landscape by transparency created through the offices. The living areas, offices and common rooms, surround this atrium, balanced and symmetrically, each benefiting from different directions and different landscapes.

On energy and the environment, we tried to reach the 15th target of high environmental quality (HQE), which tends to correct the ecological footprint ... In the case of a conventional construction; the influence of the buildings is permanently lost to the detriment of the biodiversity. We have therefore chosen to minimize the building impact on the ecosystem, restoring lost space: on stilts, the building will be covered with a roof garden.

REGAIN (bis) preserves of maximum the soil and recreates on the roof a “memorial" of biodiversity removed. We invite thus, biodiversity in both the building and under the building: shrubs, grasses, bulbs and plants on the roof, ferns under the building, recreating an image as the different strata of the forest environment, the undergrowth and the canopy.

Building users opinion

The employees of a company feel less invested with active mission to operate the bio climatisme of a building, therefore the automation of a number of function. Bioclimatic design requires expertise to prevent disturbing effects such as glare or risk of overheating, particularly as the envelope is over-insulated.

If you had to do it again?

The Siziaf is an occasional contractor on building construction, this is not its original purpose.
The general organization of the project between architect and contractors as well as design and construction remains relatively much more complex when performance targets are expected.

See more details about this project

http://parcdesindustries.com/IMG/pdf/Fiche_batiments_regain_bis_23_12_2014.pdf

Stakeholders

Stakeholders

Function : Contractor

SIZIAF

Arnaud Lecourieux

http://parcdesindustries.com/spip.php?page=sommaire&lang=fr

Site certified ISO 14001, Energy and Environmental Rehabilitation seat ongoing participation in European calls for projects to develop environmental practices in industrial activity areas

Function : Assistance to the Contracting Authority

Alignum

Function : Assistance to the Contracting Authority

Comète Ingénierie

Yaminah Bellacene

http://www.comete-ingenierie.fr/

Function : Others

Septentrionale de construction

Cécile Exbrayat - c.exbrayat@septentrionale.fr

http://www.septentrionale.fr/

Function : Assistance to the Contracting Authority

Iqtissad

Function : Others

Qualiconsult

http://www.groupe-qualiconsult.fr/

Function : Environmental consultancy

Namixis

http://www.namixis.net/

Contracting method

Other methods

Energy

Energy consumption

Primary energy need : 46,00 kWhep/m^2.an

Primary energy need for standard building : 65,00 kWhep/m^2.an

Calculation method : RT 2012

Breakdown for energy consumption : Heating: 16.6 ECS: 0 lighting: 7.8 Auxiliary: 21.9

Real final energy consumption

Final Energy : 39,00 kWhef/m^2.an

Real final energy consumption/m2 : 11,90 kWhef/m^2.an

Year of the real energy consumption : 2 015

Envelope performance

Envelope U-Value : 0,30 $W.m^{-2}.K^{-1}$

More information :

Bbio = Bbiomax - 25% (target - 30%)

Building Compactness Coefficient : 0,49

Indicator : I4

Air Tightness Value : 0,30

Users' control system opinion : ongoing evaluations

More information

Cep RT = 46.3 Photovoltaic off kWep / m².year) or Cep = Cepmax - 39% (target - 40%) Total Cep out Photovoltaics = 65 kWep / m².year) (target: 120) Cepenr = -8 kWep /m².an be Cepenr Cepmax = -110%

Renewables & systems

Systems

Heating system :

- Individual gas boiler

Hot water system :

- Individual electric boiler

Cooling system :

- Others

Ventilation system :

- Double flow heat exchanger

Renewable systems :

- Solar photovoltaic

Renewable energy production : 100,00 %

18 monocrystalline 260 Wp panels is 4390 kWh / year expected for the overall needs of 3800 kWh / year (including electro-domestic appliances)

Solutions enhancing nature free gains :
Apports solaires passifs, enveloppe sur-isolée (48 cm isolation périphérique, 40 cm en toiture et en plancher, triple vitrage)

Smart Building

BMS :
Energy metering, control of heating, lighting and cooling, raised defects

Smartgrid :
Energy metering in real time (production and consumption)

Users' opinion on the Smart Building functions : being evaluated

Environment

Urban environment

Land plot area : 2 000,00 m^2

Built-up area : 50,00 %

Green space : 1 725,00

Located on a ISO 14001 certified site, the building does not extend and remains compact. The majority of its grip surface on-high, reducing the footprint of the building, land and the deterioration of the existing biodiversity. The print is totally restored through the roof garden, allowing biodiversity reassert itself.
The promontory creates thus a 360 ° view on the region and its remarkable sites.

Products

Product

Métis

Le Relais

Stéphane Bailly

http://www.isolantmetisse.com/

Product category : Finishing work / Partitions, insulation

Métisse® is a range of acoustic and thermal insulation in recycled cotton for building construction. It insulates against cold and heat, but also the noise. It has exceptional acoustics thanks to the cotton that composes it. The RELAIS is a network of companies acting for 30 years for the integration of people suffering

exclusion, through the creation of sustainable jobs. Member of Emmaus France, it based its action on the conviction that the return to work of people in difficulty is one way to help them preserve their dignity and regain a place in society. It developed for it several economic activities which have enabled the company to create more than 2400 jobs until today. The product is manufactured on the Park site a few hundred meters from the REGAIN BIS.

Product greatly appreciated by companions because it is not irritating, easily hand cut, odorless during and after installation. It is also very easy to install , its acoustic and thermal qualities are felt in the premises in which it is placed .

Costs

Construction and exploitation costs

Renewable energy systems cost : 12 850,00 €

Total cost of the building : 620 000 €

Energy bill

Forecasted energy bill/year : 14,00 €

Real energy cost/m2 : 0.06

Real energy cost/Work station : 1.75

Health and comfort

Water management

Consumption of harvested rainwater : 10,00 m^3

Storm water recovery tank 10 m3 for:
- watering: Drip drop enslaved to a humidity sensor
- the flushing of toilets: Double speed chase

Indoor Air quality

All interior products: (A +) certified or eco-labeled and current VOC measurement

Comfort

Health & comfort : Natural cooling privileged Daylight View quality

Measured indoor CO2 concentration :
430 ppm (le 16/06/2015 à 16h)

Calculated thermal comfort : 19°C mini et 25°C maxi

Measured thermal comfort : 24.1°C (le 16/06/2015 à 16h, température extérieure : 19.9°C)

Acoustic comfort : Inside dubbing Brown, in perforated vertical battens (in his trap)

Carbon

GHG emissions

GHG in use : 4,80 $KgCO_2/m^2/an$

Methodology used :
RT 2012

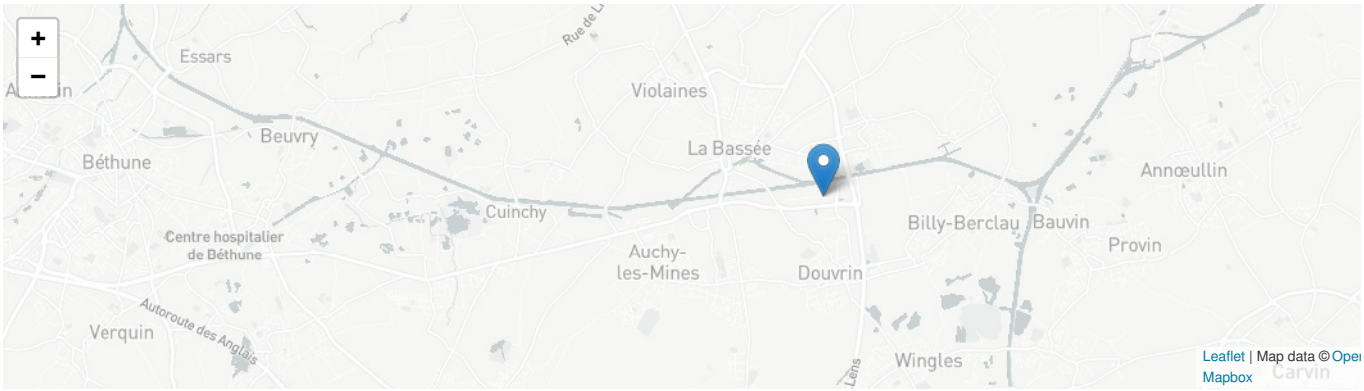
Life Cycle Analysis

Eco-design material : - Bio-based materials: wood fiber insulation produced in France, OSB type of reconstituted wood panels (German origin), pine wood structure of the Vosges, interior and exterior cladding in raw untreated wood origin France.
- Materials from the Recycling: Mixed insulation panels and batting (produced on the park a few hundred meters from the building)

Contest

Reasons for participating in the competition(s)

REGAINS BIS est un bâtiment exemplaire et innovant à plusieurs niveaux. Il est très performant énergétiquement (très faible consommation d'énergie par une enveloppe passive), il consomme 100% de l'énergie qu'il produit localement, il est composé de matériaux bio-sourcés et recyclés, et se préoccupe du confort et de la santé des ses occupants. Il respecte également la biodiversité du site qui est certifié ISO 14001 depuis 10 ans maintenant...Ce projet n'est pas né par hasard, il est le fruit d'une réflexion mûrie par l'expérience (cf. construction du premier REGAIN), mais également de la volonté de ses Maîtres d'ouvrage d'être exemplaire par l'action...



Date Export : 20230423203740