Apprentice Training Center Moulin Rabaud

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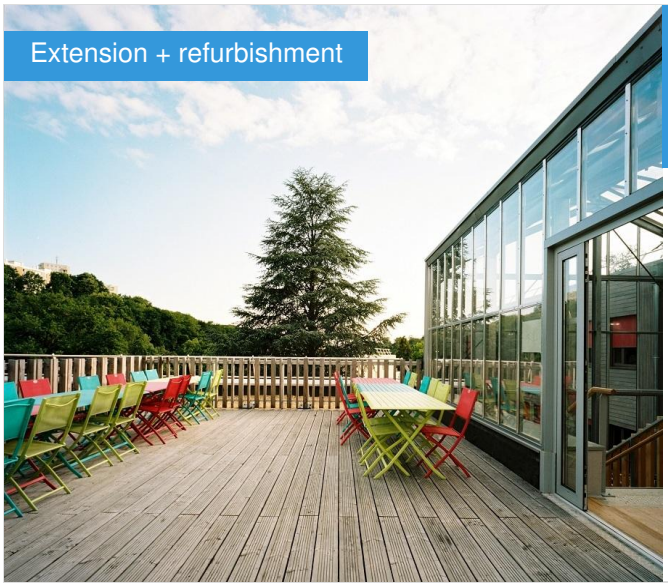


Primary energy need :

80 kWhep/m².an

(Calculation method : RT existant)

ENERGY CONSUMPTION

Economical building — *Building*

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

Energy-intensive building

Building Type : School, college, university
Construction Year : 1974
Delivery year : 2017
Address 1 - street : 87000 LIMOGES, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 3 300 m²
Construction/refurbishment cost : 1 700 000 €
Cost/m2 : 515.15 €/m²

Certifications :

LABEL LA ACCESSIBILITE

General information

Overall rehabilitation: thermal, indoor and outdoor circulation, creation of convivial spaces, compliance with PMR standards.

The approach emphasizes both:

- the **environmental performance of the project, (** beyond the BBC Renovation objective without forgetting the treatment of ventilation and airtightness, essential for the sustainability of the building and the comfort of its users)
- **high speed and quality of implementation,**
- **an architectural requalification of the renovated buildings** and the site, contributing to the enhancement of the image of the CFA, (creation of a glass roof in the heart of the building, new arrangement of interior circulations for the accessibility of the whole, landscaping of surroundings)

Thermal performance of the envelope:

- before work: 257 kWh / m².shab

- after work: 50 kwh / m² / shab (factor 5)

Sustainable development approach of the project owner

Request from the building owner: Reduce the energy consumption of existing buildings, improve reception areas, upgrade the image of the CFA and bring accessibility standards to the building.

The thermal approach proposed by the project management, rather than limiting itself to the regulatory calculation RT and a search for labeling, was more global: the Fiabitat thermal design office, through its tool Fiabiscope, made a multi-criteria analysis, which is both more precise and closer to reality on the thermal aspect: dynamic thermal simulation giving real heating needs zone by zone, and wider on the environmental impact of the project: greenhouse gas emissions greenhouse, nonrenewable primary energy, consumed gray energy, operating cost.Precisions on the Fiabiscope approach: https://www.fiabitat.com/thermiques-studies / le-fiabiscope/ See the attached thermal study for the results.

Architectural description

Two existing buildings from 1974 with prefabricated concrete facades on 2 levels, compact, with rooftop terraces, column-beam structure, which allow economical and effective solutions: external insulation in **prefabricated wood panels** (effective treatment of thermal bridges and low incidence on interior spaces, thus reduced construction nuisances).

In summary, the approach emphasizes both the environmental performance of the project, a high speed and quality of implementation, and an architectural requalification of renovated buildings. The project plans to go beyond the BBC Rénovation objective, to reduce the environmental impact of the project in a more global way: reduction of GHG emissions, low energy gray materials, sustainability and recycling at the end of life, without forget the treatment of ventilation and airtightness, essential for the durability of the building and the comfort of its users.

Building users opinion

very positive, real added value in terms of comfort, light, fluidity of circulation, conviviality of spaces

If you had to do it again?

Regret not having been able to use the cellulose insufflated as expected as insulation, because of fire standards in renovation

See more details about this project

Stakeholders

Contractor

Name : Chambre des métiers et de l'Artisanat de la Haute-Vienne
Contact : M. Sébastien Sahuguède
http://www.cfa-lemoulinrabaud.com/

Construction Manager

Name : Latitude 48° architectes (Viviana Comito, Louise Ranck, Lucie Rosier architectes) - crédit photos (format carré) : Marcello DI MASI
Contact : Louise RANCK architecte 06 20 78 69 95 l.ranck@wanadoo.fr
http://www.latitude48.net

Stakeholders

Function : Thermal consultancy agency

FIABITAT CONCEPT

Frederic LOYAU : fred@fiabitat.com

http://www.fiabitat.com
thermal study and dynamic thermal simulation

Contracting method

Separate batches

Type of market

Global performance contract

Marche public loi MAPA

Energy

Energy consumption

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

Primary energy need for standard building : 350,00 kWhep/m^2.an

Calculation method : RT existant

CEEB : 0.0002

Breakdown for energy consumption : Total distribution final consumption electricity use (kWhef / m².an) with Surface SHON = 3300m² Heating: 46.1 ECS (out of process): 0 Auxiliaries: 0.06 Lighting: 2.41 Appliances: N.C Total breakdown final electricity consumption by type of energy (kWhef / m².year) with Surface SHON = 3300m² Electricity: 16.89 Gas: 35.22

Initial consumption : 355,00 kWhep/m^2.an

Real final energy consumption

Final Energy : 49,16 kWhef/m^2.an

Envelope performance

More information :
Detailed U value:
Low floor 0.21
Outside wall 0.20
Joinery 1.50
Flooring high 0.17

More information cf doc thermal report

Indicator : n50

Air Tightness Value : 2,31

Users' control system opinion :

The automatic regulation of the ambience in the canopy works well, no feeling of overheating.

More information

Calculation by the PLEIADES COMFIE software in dynamic thermal simulation

Renewables & systems

Systems

Heating system :

- Condensing gas boiler

Hot water system :

- Gas boiler

Cooling system :

- No cooling system

Ventilation system :

- Single flow

Renewable systems :

- No renewable energy systems

Solutions enhancing nature free gains :
verrière faisant office d'espace tampon avec régulation automatique

Environment

Urban environment

Land plot area : 20 000,00 m^2

Built-up area : 13,00 %

Green space : 18 500,00

Redevelopment of outdoor spaces and circulations for accessibility accessibility, plant plantations, replacement of bitumen with deactivated concrete. Maximization of planted areas, reduction of asphalt surfaces.

Products

Product

Exterior joinery Guillaumie

Guillaumie

cathia.caron@guillaumie.com

http://guillaumie.com

Product category : Finishing work / Exterior joinery - Doors and Windows

Exterior carpentry Douglas Limousin made on site. Wood or wood-aluminum

Very good acceptance

Costs

Construction and exploitation costs

Cost of studies : 119 500 €

Health and comfort

Comfort

Health & comfort :

Simple flow ventilation with preheating by blowing in the classrooms and offices, and extraction in the sanitary, because of the potential presence of radon in the basement.Regulatory rates 18 m² / h / pers.Modulation by programmable clock

Measured thermal comfort : hypothèse de 20°C en hiver, classe A énergie DPE

Carbon

GHG emissions

GHG in use : 9,00 $KgCO_2/m^2/an$

GHG before use : 69,60 $KgCO_2$ $/m^2$

, ie xx in use years : 7.73

Life Cycle Analysis

Eco-design material :

Douglas local Limousin for wood frame prefabricated framing panels, part of cladding, and all exterior joinery

Contest

Reasons for participating in the competition(s)

Dispositifs énergétiques et techniques :

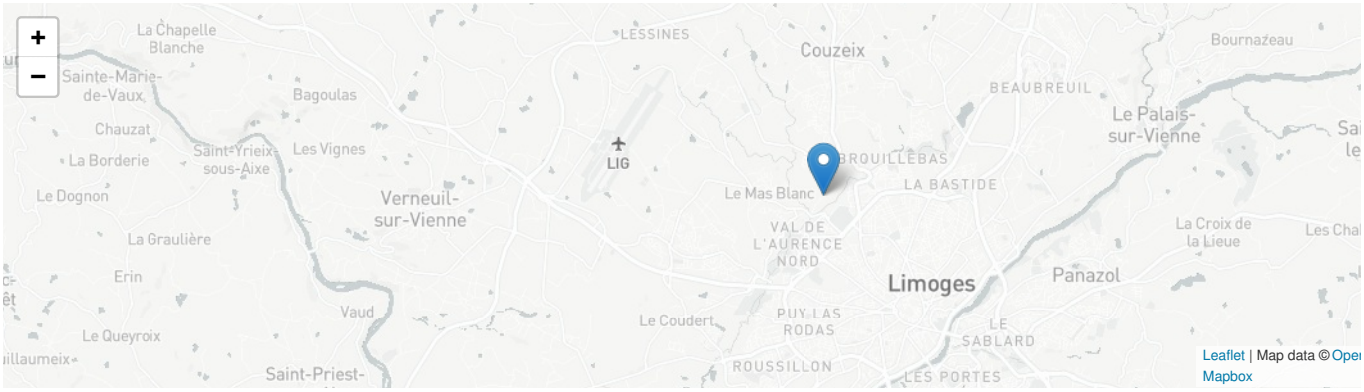
- ITE (sur béton préfabriqué existant) en panneaux ossature Douglas du Limousin préfabriqués, remplissage laine de roche. Parement: façades sud en bardage en douglas du Limousin (traité avec un saturateur gris pour anticiper le vieillissement) / façades nord en béton fibré (teinté dans la masse)
- ITE des pignons en laine de roche, enduit chaux
- Menuiseries bois-aluminium en Douglas du Limousin, stores de protection solaire
- Renforcement de l'isolation des toitures terrasses, nouvelle membrane EPDM et gravier
- Aménagement d'une terrasse accessible en platelage bois sur le toit
- Création d'une verrière, centre névralgique du projet à la convergence des flux, et espace de convivialité, avec régulation automatisée du climat intérieur.
- Création d'un circuit de ventilation par insufflation avec préchauffage.
- Nouveau circuit de chauffage
- réaménagement des espaces d'accueil
- décloisonnement de certains espaces dans l'administration, nouveaux sols caoutchouc et peintures intérieures (circulations, bureau, salles de cours)
- aménagement des cheminements piétons extérieurs

Building candidate in the category

Energie & Climats Tempérés

Coup de Cœur des Internautes

Prix des Etudiants




sous-Aixe
Bournazaud
LA MAISON DIEU
Les Rivaux
Aixe-sur-Vienne
Fargeas
Mérignac
Isle
FERRÉES
ROMANET
Feytiat
L'Occitane
La Gare
Condat-sur-Vienne
Vengence
La Combe
Eyjeaux
Boisseuil
Beynac
Bosmie-l'Aiguille
Séreilhac
Le Buisson
La Thiverie
La Plagne
Le Petit Chalier
Solignac
Le Vigen
La Grange
La Tuilerie
Roulhac
Chaufarie
Gauthier
Saint-Martin-le-Vieux
Gorre
Route de Périgueux
La Plagne
L'Occitane
Burgnac
Les Plasses
Chatenet
Lavignac
Jourgnac
Saint-Hilaire-Bonneval
Meilhac
Puybonnieux
Flavignac