


Driving Licence Examinations Center

by Frédéric MARION / 2015-07-08 17:26:20 / France / 11894 / FR

New Construction



Primary energy need :

77.8 kWhep/m².an

(Calculation method : RT 2012)

ENERGY CONSUMPTION

Economical building *Building*

< 50	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 : 2014
Address 1 - street : 1, Rue Mathieu de Dombasle 55430 BELLEVILLE SUR MEUSE, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 278 m².SHON
Construction/refurbishment cost : 514 690 €
Cost/m2 : 1851.4 €/m²

Proposed by :



General information

Since 2005, the practical examinations of the driving license for motorcycles and trucks took place in precarious conditions on a military road near Verdun. In 2009, the Delegation for Safety and Road Traffic has programmed the construction of a new runway and a building allocated to theoretical tests.

From the outset of the project, the client wanted to include the construction of this building an environmental approach, particularly in selecting the contractor of the operation given the skills and references presented in sustainable construction.

Architectural approach

Set the limit of a business park on the edge of the fields and on the slopes of developments, the ECCP involved in building both the rusticity of an agricultural building and the modernity of a rational response to a tertiary program incorporating a requirement qualitéenvironnementale. In a search of accuracy and simplicity, construction is intentionally a very simple massing, hollowed by two galleries in false plafondsplanches larch openwork, for a reception and entrance,

and a southwest side, coverage in cantilever, sun visor étéformant offices distribution passageway.

The program in short

The site of the examination center, intended primarily to improve reception conditions for candidates and working conditions of inspectors, has a mixed track for permits A & EC provision for driving schools and a building. This building is primarily intended to:

- Local ERP exams for meetings of code (ETG) and oral or written examination for permits A & EC (EC1), with reception areas, waiting and health.
- The premises of the personal with the offices of inspectors license, a space kitchen-dining, and health. The ETG large room can be used as a place of shared meetings.

Project specifics:

Beyond compliance with the functional program, regulation, budget, and enhancement of public services, a process of environmental quality, taking into account the concept of total cost, was desired by the project owner. The architectural and technical solution was available in a low-carbon perspective and declined by a bioclimatic design, the important use of bio-sourced materials, the implementation of simple and durable devices, and the cross-search optimal energy performance.

Sustainable development approach of the project owner

From the outset of the project, the client wanted to include the construction of this building an environmental approach, particularly in selecting the contractor of the operation given the skills and references presented in sustainable construction.

The state wished to be exemplary through a comprehensive approach taking into account the quality of construction, energy performance, the operations costs, transportation of materials without forgetting the impact on climate change.

Consultation with the Inspectors of the driving license and road safety throughout the project development has optimized the future users of the framework.

The bio-based building materials enhance comfort, food quality and store 46 tons of carbon. In a predominantly agricultural and forestry department in a logic of territorial ecology, the choice to build the walls and the frame with wood has become faster.

Similarly, it was agreed to experiment the use of straw to insulate the perimeter walls.

Contrary to popular belief, the straw used in insulation is fire resistant, but under certain conditions. The boots that do not cost very expensive (€ 2 each) are easy to implement.

The architect chose to insulate the roof with cellulose wadding and top it off with a green roof and ventilated to improve summer comfort. All windows and siding are wooden. The earthen plaster of the corridor is of educational connotation for visitors and plantations consist of local species such as elderberry and lime.

The Hall of Theoretical Examination General (code), with 40 seats, located north take four skylights and leaves the south side for offices benefiting thus solar gains. Finally, the waters of the roof is collected for flushing toilets.

This willingness to value the regional materials found 9 local companies including 8 Meuse engaged in this process. The supervisor and the company responsible for implementing the straw were formed in the market, the professional rules of building straw.

The companies are strongly committed to respond positively to the social clause in the market. In this context, seven persons have made 666 hours of work for 598 initially planned.

This building, erected in just 1 year, helped train workers in new techniques and must now serve as an example:

- to educate professionals and elected officials as to the suitability of bio-based materials;
 - to organize this industry by uniting the actors;
 - to create synergy between project owners and local businesses while leveraging knowledge.
- Of course, the site is pre-wired for fiber optics, but especially accessible to people with reduced mobility.

Architectural description

Based in voluntary simplicity limit of a business park on the edge of the fields and on the slopes of developments, the ECCP building displays both the rusticity of an agricultural building and the modernity of a rational response to a tertiary program integrating a requirement of environmental quality.

In a search accuracy, construction is intentionally a very simple massing, hollowed by two galleries in false ceilings larch boards pierced, allowing a reception and entrance, and a southwest side, for coverage cantilever, summer sun visor, forming distribution offices passageway.

The outer skin is the declination of different implementation larch natural outdoor siding. It can be installed siding vertically for facades exposed to the weather, the recovery looked in the direction of the winds and rain, or horizontal installation for protected facades, but also used in laying to battens trapezoidal in horizontal installation openwork to the right of the building entrance.

North side, the parapet gable is highlighted by the horizontal profile of the high ventilation floor green roof.

The longitudinal wall and protected from the adit, cut and punctuated by vertical timber battens echoing the structural columns, is coated with a mixture of earth ground, straw and sand.

The openings, the larch frame, allow judicious natural lighting of interior spaces, entrances, exits, and views on the exterior, access and tracks, or on the

landscape as to the bay window in the background lobby.

The interior is conceived as permanent, functional, and simple and allows a possible new uses.

Inside the structure is revealed by wooden poles and in the examination room, taller by 3 glued laminated carriers farms impact the inclination reveals the roof slope.

On one of the walls of the reception, a small bay gives to see the inside of the wall, straw and wood frame.

Wood widely participates in the construction of exterior spaces as the tracks of local storage with its canopy cantilever, and the enclosure for waste, made with siding falls blades of the main building.

Stakeholders

Stakeholders

Function : Designer

Frédéric MARION Architecte dplg

Frédéric Marion - 7 rue St-Martin 54136 BOUXIERES AUX DAMES ☎ 03 83 22 25 28 ✉ FM@architrame.com

<http://archilink.com/~trame/scm/>

OPC + quantitative call for tender - without Performing Studies

Function : Thermal consultancy agency

Lorr'EnR

John PINON - Tel.03 83 15 66 03 john.pinon@lorr-enr.fr

<http://www.lorr-enr.fr/>

Thermal study - site assistance (air tightness)

Function : Contractor

Etat- Direction Départementale des Territoires de la Meuse

<http://www.meuse.gouv.fr/>

Function : Designer

Dominique PETIT architecte dplg

Dominique Petit - 7 rue St-Martin 54136 BOUXIERES AUX DAMES ☎ 03 83 22 25 29 ✉ DP@architrame.com

<http://archilink.com/~trame/scm/>

OPC + quantitative call for tender - without Performing Studies

Function : Designer

Anne Thomas architecte - certifiée RFCP

AT-HOME a.thomas@archilink.com ☎ 06 80 85 53 27

PRO Phase - Specifications straw walls expenses

Type of market

Global performance contract

Energy

Energy consumption

Primary energy need : 77,80 kWh_{ep}/m².an

Primary energy need for standard building : 84,00 kWh_{ep}/m².an

Calculation method : RT 2012

Envelope performance

Envelope U-Value : 0,24 W.m⁻².K⁻¹

More information :

Roofing:

ventilated roof terrace vegetated with PVC membrane (Sarnafil)

Envelope:

larch wood cladding regional PEFC vertical siding installation - horizontal installation in protected front (south gallery)
skim coating made with earth from the plot to the front of the gallery entrance.

Insulation (roof, walls, floors, types, thicknesses):

ventilated roof insulation cellulose wadding 50kg / m³ 40 cm thick - Air tightness membrane Intello of Proclima - R wall = 10.352

Straw insulation walls 110 kg / m³ 36 cm thick wall R = 10.352

Finishes (facades, wall coverings, floors, ceilings):

BA 13 with inner walls painted glass cloth Floor tiles porcelain stoneware

Perforated ceiling set False ceilings BA 13 including heating

External joinery: French larch Joinery Double glazing 4/20/4 Blade Argon Low emissivity, Warm Edge Spacer: $U_w \leq 1.1W / m^2K$ Q4Pa surfing = 0.18 m³ / (hm
2) Bbio: 61.6 / 84 Bbiomax

compactness factor: Ratio of volume heated and insulated walls Surface: 0.67

Note: can not inform the box coefficient of compactness below 0 value set by default

Indicator : n50

Air Tightness Value : 0,59

Renewables & systems

Systems

Heating system :

- Radiant ceiling

Hot water system :

- Individual electric boiler

Cooling system :

- No cooling system

Ventilation system :

- Double flow heat exchanger

Renewable systems :

- No renewable energy systems

Other information on HVAC :

Heating system:

electric (very few intended use: 4450 kWh (EF) / year) - radiant ceilings with air diffusion

DHW system: electric (very little use: 981 kWh (EF) / year)

Lighting system:

- Natural light through windows
- Skylight light-tube-type concealable
- Fixtures with compact fluorescent sources outdoor LED spotlights
- No air conditioning
- Night ventilation
- Phase shift of major insulation
- Green roof and ventilated

Strong inertia contribution by insulated concrete slab soffit. Wall materials and roofing hygrophilous: regulatory effect of hygro-thermal comfort (evaporation / condensation)

Note: a study for a wood pellet heating was conducted. The solution was not selected having regard to "Investment management & cost / heat production" too high.

Solutions enhancing nature free gains :

Implantation bioclimatique ouverture au sud et fermeture au nord pour le soleil d'hiver –protection solaire d'été au sud par auvent galerie

Environment

Urban environment

Land plot area : 14 201,00 m²

Built-up area : 2,00 %

Green space : 9 600,00

Land settlement in area of activity limit and farmland

Developments of trails for motorcycle license tests and trucks

Products

Product

Straw Bales

univertfoin

Joseph Geltz 14 Place du Marché, 57 320 Bouzonville. France T 33 (0) 387 782 478 M 33 (0) 611 253 227 E-mail: contact@univertfoin.com

<http://www.univertfoin.com/>

Product category : Second œuvre / Cloisons, isolation

Straw bales forming integrated insulation to wood-frame boxes (External bracing for rain-fiberboard DWD AGEPAN 16 mm - straw bale insulation - Indoor Housing OSB KRONOBOIS by 18 mm)

Compressed wheat straw bale formed

Boots put on edge, front view, fibers perpendicular to the wall, upSection 360/490 mm50 to 120cm according to procedure and project needs

Density 140kg / m³

Density useful 120kg / m³

Humidity 10-12% at time of installation

Laying by the interior in protected site

Regional product, manufacturing, transport, storage and protection in accordance with French rules of construction straw (PGPR)

Project design straw: Anne Thomas, certified RFCP



Traditional surface coating mud - sand - straw

Fabrication sur site

Fabrication sur site

<http://www.palazzo-sarl.com/>

Product category : Gros œuvre / Structure, maçonnerie, façade

Land use of the site, regional sand, and straw waste. Dosage, testing and on-site testing

Laying on wire mesh

earth-based plaster manufactured, tested and implemented according to the requirements described in the PCCN 2012



Costs

Health and comfort

Water management

rainwater harvesting for toilets, urinals and cleaning floors - 5m³ tankgreen roof

EP hydrocarbon treatment of roads

Retention pond

Dry privileged sector for construction

Indoor Air quality

VMC double generously dimensioned flow controlled rate depending on the CO₂ concentration.

Neutral materials without emission (tiles, wood, ...)NF environment / A + paintings.

Humidity: Walls perspirantes with managing the transmission of water vapor (see attached study U-Wert)? hygrophilous insulationVMC 2x

Comfort

Health & comfort : Limiting the impact on the health of materials

- Sound neutral materials and easy to maintain
- Limitation of VOC- NF environment painting

Carbon

GHG emissions

Used materials helped to trap about 46 tons of CO² - (calculation made from the INIES database).

Life Cycle Analysis

Eco-design material : Limitation of gray energy used for materials and local production

- Regional Straw
- Cellulose wadding Vosges Production
- Larch timber cladding Vosges
- Earth floor area used for coating the entrance gallery - with a ground mix + sand + straw Moselle the site + meal
- Corporate features Meuse including many of Verdun

Limiting resource depletion speak materialsUsing recyclable bio-based materials: wood, cotton, straw, ...)

Cellulose wadding from recycling

Limitation of maintenance and servicing of materials

materials maximum maintenance (eg natural wood siding, tiled floors, ...)

Durability and disassembly of the construction system

Wood frame / Straw / cellulose wadding

Fully removable and recyclable

Contest

Reasons for participating in the competition(s)

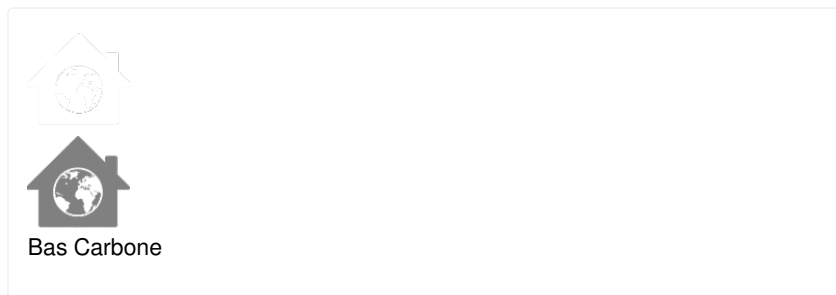
Desired sobrietyThe use of bio-based construction materials for this low carbon building improve its thermal efficiency in winter and summer, comfort of use, health in the building and allows the storage of 46 tons of carbon. In this region, essentially focused agriculture and forestry, the choice for wooden walls and carpentry was obvious, especially in the perspective of local ecology. The same logic applied when it was decided to use straw for wall insulation and local raw earth for skim coating. The ventilated roof is insulated with cellulose wadding.

The use of regional materials (PEFC wood and cellulose wadding from the Vosges, straw from Moselle...) was favored. The contractor and the construction companies are also local or regional. Earth from the land was used for skim coating, as the earth excavated for the archeological study, it was fully used for landscaping. Rain water is collected on the vegetalised rooftop, stored and used for bathrooms and cleaning.

Construction was fully committed to dry process logic. Simple design, materials (as little modified as possible) and technics enable a great recyclability in case of restructuring, extension, or deconstruction. Volume compacity, bioclimatic design, thermal efficiency of walls, passive level air-tightness, dual-flow ventilation were the answers provided to achieve ambitious goals in terms of energy sobriety, reduced consumptions.

An energy solution with wood pellets was studies and discarded for economical reasons - while remaining a possibility - for a heating solution through modular radiating reversible ceiling coupled to controlled ventilation. The building doesn't have any AC but features reversible controlled ventilation for night cooling. A solution to bring daylight was experimented with tubular light wells with shutters.

Building candidate in the category





Coup de Coeur des Internautes



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