


Extension of the Aglaé Nursery - Le Mesnil-le-Roi

by Ekopolis Centre de ressources / 2014-07-02 00:00:00 / France / 5306 / FR



Primary energy need :

84.68 kWhep/m².an

(Calculation method : RT 2005)

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 : Preschool, kindergarten, nursery
Construction Year : 1983
Delivery year : 2010
Address 1 - street : 12 rue Aristide Briand 78600 LE MESNIL-LE-ROI, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 832 m² SHON
Construction/refurbishment cost : 1 776 636 €
Number of Children : 62 Children
Cost/m² : 2135.38 €/m²

General information

To increase the capacity of the Aglaé Nursery which was a metal prefab from the 80s, the city of Mesnil-le-Roi decided to launch an extension project. The operation required high energy performance, with a small budget and the **constraint of work on occupied site** (no other nursery in town).

The conservation of the existing building's envelope and **re-use of numerous partitions** allowed to achieve the project with limited expenses and limited waste production.

The new envelope allows a new orientation of the building with maximum openings on South. Fresh air is preheated by an **experimental Canadian well** installed shallow depth along the foundation and therefore without excavation overspends.

Sustainable development approach of the project owner

The conservation of the existing building's envelope and re-use of numerous partitions allowed to achieve the project with limited expenses and limited waste production.

The new envelope allows a new orientation of the building with maximum openings on South. Fresh air is preheated by an experimental Canadian well installed shallow depth along the foundation and therefore without excavation overspends.

Acoustic comfort:

An acoustic study was undertaken after the delivery of the building and baffle were installed to minimize the nuisance caused by the height of the rooms in the extension by reducing the reverberation time.

Lighting comfort:

The amount of natural light in the extension is considerably higher than in the original premises.

Thermal comfort:

no thermal simulation. High insulation of the building

Waste Management:

- Recovery of the original building materials
- The project gives prominence to untreated wood.
- The envelope and the walls of the original building were preserved and reused on site.

Energy Management:

- No life cycle analysis of the building was conducted but low greenhouse gas emission solutions such as wood were implemented.
- The building is highly isolated to reduce its energy consumption and preservation of the original walls helps to minimize the project's grey energy. It is equipped with a Canadian well and a double-flow ventilation. Sensors were installed in order to monitoring the action of the Canadian wells.

Architectural description

The contractor, the municipality of Mesnil-le-Roi, wished to preserve the prefab which hosted the municipal nursery and added to it an extension in order to respond to the need of additional places. The will to reconcile a low cost operation and improvement of the energy performance explain this decision.

The city helped to keep on site the equipment involved in the life on the community and to maintain activity in existing buildings during construction.

The construction of a floor was considered but it would make the working of the nursery more difficult.

The purchase of an side plot finally allowed to build an extension on the ground floor and to create a park while preserving the same amount of exterior areas.

The original building had already been extended in 2003 and was a metal prefab. Its insulation had been judged inadequate to meet current requirements. She also caused problems of condensation.

The project of a well-isolated extension (30 cm of tissue in addition to 5 cm original polyurethane) has planned to include the old building into the new envelope.

Building users opinion

- Users regret not having a single control device for radiators
- The working principle of the building appear not to have been appropriated by users.
- The absence of blinds on some large windows in south-exposed areas for budgetary reasons cause glare episodes. Spaces only lit by indirect daylight are found to be dark by the Director.
- During hot times, users reported high temperatures in south-exposed areas. The architect has observed that the building allows preserving an internal temperature low by 5°C than the external temperature. Temperature of the areas varies significantly depending on their exposure.
- The changing room is ventilated by a double flow ventilation which is probably insufficient since the odor give off in the adjoining rooms.

See more details about this project

<http://www.ekopolis.fr/realisations/extension-de-la-creche-aglae>

Stakeholders

Stakeholders

Function : Contractor

Mairie du Mesnil-le-Roi

Function : Designer

Jérôme Laplane

Function : Thermal consultancy agency

Coretude

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

Function : Other consultancy agency

Baudrillard consultants

Function : Company

Zanier S.A.

<http://www.zaniersa.fr/>

Function : Company

Boreal

Energy

Energy consumption

Primary energy need : 84,68 kWhep/m².an

Primary energy need for standard building : 152,01 kWhep/m².an

Calculation method : RT 2005

Envelope performance

More information :

- Existing structure and facades : metal prefab
- New structure: wood
- Insulation: cellulose wadding (20 cm) + polyurethane (5 cm) on preserved walls-
- Cladding: douglas without sapwood and treatment
- Roofing: zinc

Renewables & systems

Systems

Heating system :

- Electric radiator
- Canadian well

Hot water system :

- No domestic hot water system

Cooling system :

- No cooling system

Ventilation system :

- Double flow heat exchanger
- Canadian well

Renewable systems :

- No renewable energy systems

Other information on HVAC :

- Electric Heaters: Noirot R21
- Double flow ventilation: Aldes DFE3000

The roof have perfectly oriented "rampants" to accommodate subsequently solar panels.

Environment

Urban environment

Residential

Costs

Construction and exploitation costs

Total cost of the building : 1 776 636 €

Health and comfort

Indoor Air quality

The building is equipped with double flow ventilation that can help to filter the external air. The filters of the double-flow ventilation should be changed regularly and eventual condensation should be checked to ensure there's no accumulation of condensation in the Canadian well.

Carbon

Life Cycle Analysis

Eco-design material : Wood; cellulose wadding

