FRAGONARD high school

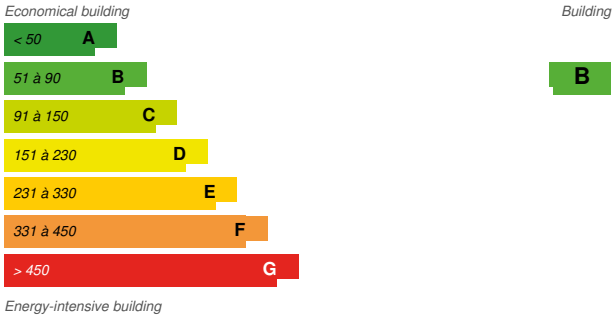
by Olivier d'ALDIN / 2020-11-20 17:36:04 / France / 3911 / FR

Primary energy need :

59 kWhep/m².an

(Calculation method : RT 2012)

ENERGY CONSUMPTION



Building Type : School, college, university
Construction Year : 1985
Delivery year : 1986
Address 1 - street : Allée le Notre, 95290 L'Isle-Adam 95290 L'ISLE ADAM, France
Climate zone : [Cfc] Marine Cool Winter & summer- Mild with no dry season.

Net Floor Area : 9 856 m² SHON
Construction/refurbishment cost : 5 065 600 €
Cost/m2 : 513.96 €/m²

General informations

As part of the energy improvement of its buildings, Ile-de-France region wished to rehabilitate the Fragonard high school in L'Isle Adam (95) by acting on the building envelope as well as on all the equipment of production and distribution of heating, ventilation and production of domestic hot water.

In addition, the Region wished to integrate the production of renewable energies and in particular the production of electricity by photovoltaic panels for the purpose of self-consumption.

The ambitious operation will have the additional constraint of having to be **carried out on an occupied site** and the energy consumption objective of the buildings is initially set at 80 kWhep / m² / year (for an initial consumption of more than 120 kWh / m² per year).

The project proposed by ERESE and Etienne Famin Architecte makes it possible to obtain today a Cep of 59.1 kWhep / m².year, as part of a CREM with monitoring and guarantee of energy performance over the first 3 years.

Sustainable development approach of the project owner

Following the adoption in 2011 by the Île-de-France Region of its Climate plan and building on its expertise in the field of environmental quality, Île-de-France Construction Durable has since 2013 broadened its scope of action in framework of thermal renovation operations for public buildings.

Know-how born of experience

The operations entrusted to Île-de-France Construction Durable to date have enabled it to acquire a wide recognized expertise in the field of environmental quality.

- HQE certification and BBC labels
- Construction of equipment with integration of renewable energy (EnR)
- Biomass, geothermal energy, photovoltaic installation, solar thermal energy, small wind power ...
- Thermal renovation of existing heritage
- Insulation of the building envelope, renovation of installations and heat production, renovation of electrical systems, etc.

A player in the climate plan

Île-de-France Construction Durable participates in the implementation of the Climate Plan adopted in June 2011 by the Île-de-France Region on its high schools (98% of regional assets).

The Île-de-France Construction Durable approach is part of the regional desire to equip itself to meet the challenge of reducing the energy consumption of the existing building stock. In this context, Île-de-France Construction Durable is positioned as a tool making it possible to define and structure a set of services to support the Ile-de-France communities in the rehabilitation of their building stock.

Architectural description

The new face of Lycée Fragonard offers a synthesis between memory and modernity.

Memory first of all, because as a school, the high school is in essence the place of transmission of our collective memory. As such, the renovation must be humble in the face of the past and be part of a smooth continuity. Thus, out of respect for the surrounding built environment, but also for the work of the architect and designer of the school, the characteristic architectural aspects of the original building are preserved, in particular the interplay of roofs and volumes, the size and position of the buildings. openings or types and distribution of materials. The quality of the composition is preserved from any gratuitous architectural gesture and the initial spirit of the place persists.

Modernity then, because the renovation is aimed in part at the younger generations. They will only be able to appropriate the walls if they find themselves in the new image that is offered to them. Freshness, ardor and dynamism are the universal signs of youth, the features of which Fragonard has so well captured. This youthful purity is transcribed in the monochrome facades of the renovated school with shades of plaster and light brick, chosen to be as close as possible. Wooden doors are installed on the singular areas, the entrance and the gallery, to give a resolutely contemporary aspect to the whole. Associated with the grain of the plaster, they represent the allegory of the virgin and immaculate canvas on which each high school student is invited to create the work of his life.

Teachers and students will recognize their old school and will recognize themselves in the new one.

If you had to do it again?

Beyond the quality of the end result, this operation turned out to be a total success as a human adventure, to the point that all stakeholders expressed their wish to renew the collaborations in other ways. If we had to do it again, we wouldn't change a thing!

See more details about this project

https://www.construction21.org/france/data/sources/users/16704/autres-elements-de-description-architecturale.docx
https://www.construction21.org/france/data/sources/users/16704/description-des-principaux-choix-architecturaux-relatifs-aux-besoins-des-utilisateurs.docx

Photo credit

11:45 am architectural photography agency / www.11h45.com/
Etienne Famin Architect
Erese HTC Group
Ile de France Sustainable Construction

Stakeholders

Contractor

Name : Ile-de-France Construction durable
Contact : Mme Zumpicchiat : nadine.zumpicchiat[a]iledefrance.fr
https://www.idf-constructiondurable.fr/

Construction Manager

Name : Offre groupement Mandataire FACADES INGENIERIE
Contact : Nicolas Demany : nicolas.demany[a]veolia.com

Stakeholders

Function : Assistance to the Contracting Authority

ERESE Groupe HTC

olivier.daldin[a]erese.fr

https://www.erese.fr
Definition of the work program from feasibility studies ▪ Drafting of the DCE ▪ Design-realization CCTP ▪ Operation CCTP ▪ Deed of Commitment ▪ Proofreading and opinion on the CCAP and RC Analysis of offers ▪ Participation in technical commissions

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Function : Designer

Etienne Famin

contact[a]etiennefamin.fr

https://etiennefamin.fr/
Architectural design

Function : Construction company

Façades Ingénierie

0169401234

Organization and methodology of the work

Type of market

Realization

Energy

Energy consumption

Primary energy need : 59,00 kWhep/m^2.an

Primary energy need for standard building : 130,00 kWhep/m^2.an

Calculation method : RT 2012

Breakdown for energy consumption : 750 MWhEP / year of gas (actual consumption) 190 MWhEF / year of electricity (actual consumption)

Initial consumption : 204,00 kWhep/m^2.an

Real final energy consumption

Final Energy : 95,00 kWhef/m^2.an

Envelope performance

Envelope U-Value : 0,26 $W.m^{-2}.K^{-1}$

Indicator : I4

Air Tightness Value : 1,20

More information

base year for final energy consumption: 2019

Renewables & systems

Systems

Heating system :

- Condensing gas boiler
- Water radiator

Hot water system :

- Individual gas boiler

Ventilation system :

- Nocturnal Over ventilation
- Humidity sensitive Air Handling Unit (Hygro B
- Double flow heat exchanger

Renewable systems :

- Solar photovoltaic

Renewable energy production : 7,40 %

70 MWhEF produit annuellement

Other information on HVAC :

Solutions enhancing nature free gains :

Vitrages à contrôle solaire

Environment

Urban environment

Land plot area : 23 664,00 m^2

Built-up area : 10 863,00 %

Green space : 5 500,00

The school's urban environment is made up of a low suburban fabric, made up of homogeneous individual houses with sloping flat tiled roofs and traditional plastered walls. The school's renovation project had to fit harmoniously and discreetly into this high-quality environment. Thus, the color of the new plasters takes over the dominant colors of the surrounding walls. The choice of wood is made to match the wooded character of the district in particular and the city of L'Isle-Adam in general.

Products

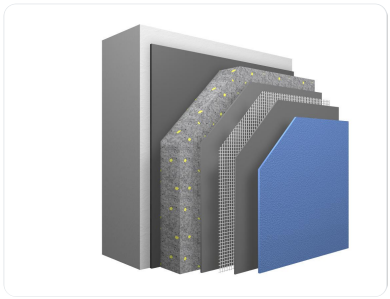
Product

StoTherm Classic ankle-resting pose

Sto A.G

sto.fr[a]stoeu.com

https://www.sto.fr/

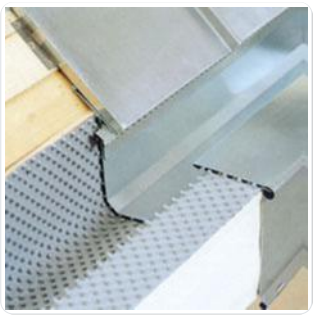


Product category : Second œuvre / Cloisons, isolation

The StoTherm Classic Calé-Dowelled system is an exterior thermal insulation system composed of a thin underlay based on a fire-retardant "StoArmat Classic plus" binder reinforced with fiberglass and applied directly to expanded polystyrene panels. External thermal insulation system made up of a thin sub-plaster based on a fire-retardant organic binder, obtained from a ready-to-use paste (without cement) reinforced with a glass fiber mesh and applied directly to expanded polystyrene panels glued or mechanically fixed by plugs or profiles on the support wall.The finish is provided by a coating based on acrylic or siloxane binder, or decorative synthetic briquettes, or a smooth finish (combination of two components) .

Very good acceptance of the product given its durability and its total integration into the project.

Bank gutters



Product category : Gros œuvre / Charpente, couverture, étanchéité

To avoid any resumption of roofing that could weaken the waterproofing, traditional gutters are replaced by side gutters covering the insulation and making the junction between the roof and the facade. The gutters extend beyond the plastered facades, above the faults. This device makes it possible to ensure the evacuation of rainwater discreetly and without adding tiles. Thanks to this gutter system, the treatment of the edge is homogeneous and the plumbness of the gutters is not changed. The anthracite gray color of the sheet metal resumes that of the frames and adjustable sunshades. In a search for architectural purity, the facade is freed from descents, which are repositioned in the least visible areas.

Perfect integration of the solution.

Costs

Construction and exploitation costs

Renewable energy systems cost : 123 590,00 €

Cost of studies : 99 000 €

Total cost of the building : 5 065 600 €

Subsidies : 287 980 €

Health and comfort

Indoor Air quality

Containment index <4
Annual average concentration of formaldehyde <100 µg / m3
Annual average concentration of benzene <10 µg / m3
C02 concentration level: 2000 ppm maximum at any time and 1300 ppm annual average

Comfort

Calculated indoor CO2 concentration :
1300

Carbon

GHG emissions

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

Contest

Reasons for participating in the competition(s)

The Ile-de-France region wished to rehabilitate the Fragonard high school in L'Isle Adam (95) by acting on the building envelope as well as on all the production and distribution equipment for heating, ventilation, lighting and domestic hot water production. The execution of the works was integrated in the framework of a CREM with monitoring and guarantee of energy performance over the first 3 years (delivery September 2019).

By integrating the production of renewable energy and in particular the production of electricity by photovoltaic panels with the aim of self-consumption, HVAC management and lighting, the ambitious operation, carried out in an occupied site is bearing fruit today with the initial objective of reducing consumption being exceeded.

Initially set at 30% by the Ile-de-France Region, the actual annual savings measured is 37% on gas and 34% on electricity for a saving of more than 118 tons of annual CO^2. The project proposed by ERESE and Etienne Famin Architect must allow the achievement of a Cep of 59. 1 kWhep/sqm.yr, well below the expected 80kWhep/sqm.yr.

A nice commitment, kept, to reduce the environmental footprint for the Region Ile-de-France / Ile -de-France Construction Durable!

Building candidate in the category

Energie & Climats Tempérés

GREEN SOLUTIONS AWARDS
POWERED BY Construction21.org

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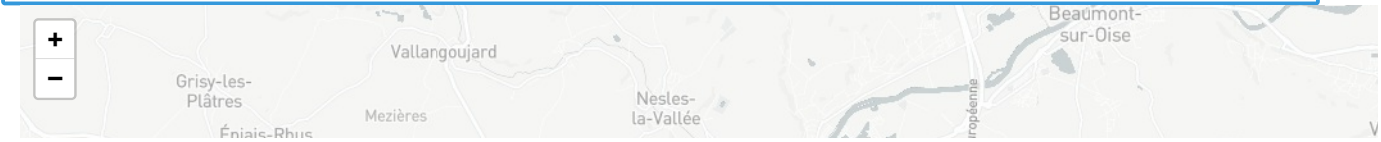

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