


Partial renovation of the Ark of Defense

by SARAH LAVAUX / 2017-06-08 15:57:46 / France / 9764 / FR



Renovation

Primary energy need :

80 kWhep/m².an

(Calculation method : RT 2005)

ENERGY CONSUMPTION

Consumption Range (kWh/m ² .an)	Grade	Category
< 50	A	Economical building
51 à 90	B	
91 à 150	C	
151 à 230	D	Building
231 à 330	E	
331 à 450	F	
> 450	G	
Energy-intensive building		

Building Type : High office tower > 28m
Construction Year : 1989
Delivery year : 2017
Address 1 - street : 1 Parvis de La Défense 92800 PUTEAUX, France
Climate zone : [Cfc] Marine Cool Winter & summer- Mild with no dry season.

Net Floor Area : 60 354 m²
Construction/refurbishment cost : 192 000 000 €
Number of Work station : 2 170 Work station
Cost/m2 : 3181.23 €/m²

Certifications :



General information

Redevelopment and modernization of the working spaces in the South wall. Renovations of the facades panoramic elevators. Modification of technical equipment and renovation of the premises in the infrastructures of the South Hills. Renovation of the roofs of the Ark and creation of a walkway bridge.

Sustainable development approach of the project owner

The environmental ambition is based on five axes: energy efficiency, durability of materials, long-term environmental performance, user comfort and sanitary quality of premises, so that the building is comfortable and pleasant to use. Live, easy to maintain, flexible, scalable and energy efficient.

Architectural description

Deep work on the façade for the winter heat + Insulated internal insulation + Improvement of Thermal resistance and waterproofness of the exterior joinery
Increased access to daylight in traffic

Building users opinion

First feedback is positive

Stakeholders

Stakeholders

Function : Construction Manager

Valode et Pistre Architectes

01 53 63 22 00

<http://www.v-p.com>

Function : Contractor

Armanéo (EIFFAGE)

Contracting method

Other methods

Energy

Energy consumption

Primary energy need : 80,00 kWh/m².an

Primary energy need for standard building : 137,29 kWh/m².an

Calculation method : RT 2005

Breakdown for energy consumption : Heating: 11.832 kWh/m² / m² Cooling: 6.544 kWh/m² / m² DHW: 6.544 kWh/m² / m² Ventilation: 31.828 kWh/m² / m² Auxiliaries: 5.312 kWh/m² / m² Lighting: 21,384 kWh/m² / m²

Initial consumption : 301,00 kWh/m².an

Real final energy consumption

Final Energy : 33,00 kWh/m².an

Envelope performance

Envelope U-Value : 0,79 W.m⁻².K⁻¹

More information :

Sprockets insulated from the outside (R = 4.12 m².K / W)

Opaque sections of North & South facades insulated from the interior (R = 3.15 m².K / W). North & South joinery Uw = 1,6 W / m².K

Access to the inertia of floors in offices (no false floors)

Building Compactness Coefficient : 0,17

Indicator : I4

Air Tightness Value : 1,70

Renewables & systems

Systems

Heating system :

- Urban network
- Heat pump
- Radiant ceiling

- Tape

Hot water system :

- Individual electric boiler
- Urban network

Cooling system :

- Water chiller
- Reversible heat pump
- Urban network
- Tape

Ventilation system :

- compensated Air Handling Unit
- Double flow heat exchanger

Renewable systems :

- Heat pump

Smart Building

BMS :

Class A GTB within the meaning of EN.15.232; Commissioning mission over 2 years of operation

Environment

Urban environment

Green space : 300,00

"La Grande Arche" is located in the business district of La Défense. It is an emblematic building, extremely well connected (public transport, shops, activities, services).

Products

Product

Rainwater harvesting network

Eiffage

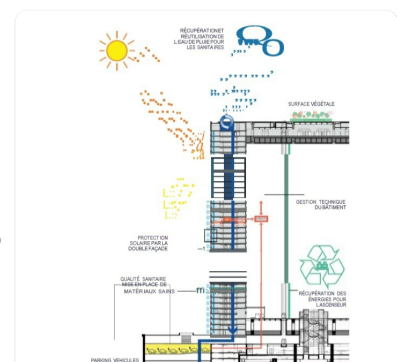
direction.communication@eiffage.com

<http://www.eiffage.com/home.html>

Product category : Table 'c21_china.innov_category' doesn't exist SELECT one.innov_category AS current,two.innov_category AS parentFROM innov_category AS oneINNER JOIN innov_category AS two ON one.parent_id = two.idWHERE one.state=1AND one.id = '23'

The rainwater from the roof of the south wall of the Ark is recovered by two sheets of 20 m3 at the lower level to each feed a sanitary column of the offices of the South wall.

The objective of this system is to reduce drinking water requirements by at least 16%.



Costs

Construction and exploitation costs

Reference global cost : 192 000 000,00 €

Reference global cost/Work station : 192000000

Health and comfort

Water management

Consumption from water network : 800,00 m³

Water Consumption/m² : 0.01

Water Consumption/Work station : 0.37

40m³ of storage recovering about 1000m². The sizing was dictated by the possible collecting surfaces and the storage volume available in the roof.

Indoor Air quality

No measurement carried out. However, 95% of the materials in contact with indoor air have an A + label for indoor air emissions (formaldehyde at 28d <10µg / m³)

Carbon

GHG emissions

GHG in use : 4,00 KgCO₂/m²/an

Methodology used :

RT2005

Building lifetime : 50,00 année(s)

Life Cycle Analysis

Eco-design material :

40000sqm of carpets labeled Gut. This guaranteed label of low emissions in indoor air, a lower consumption of resources throughout the life cycle of the product

Contest

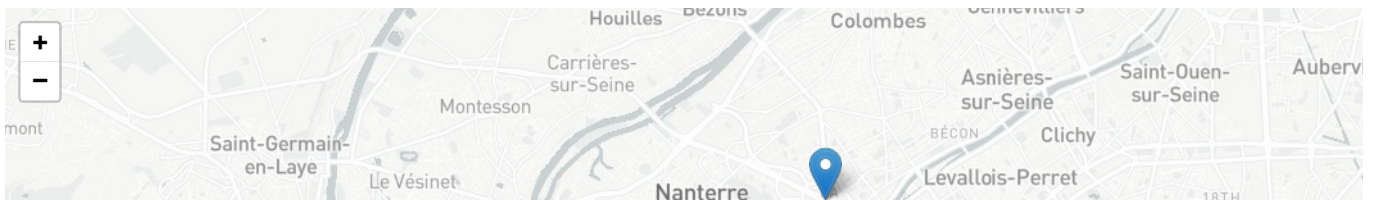
Building candidate in the category

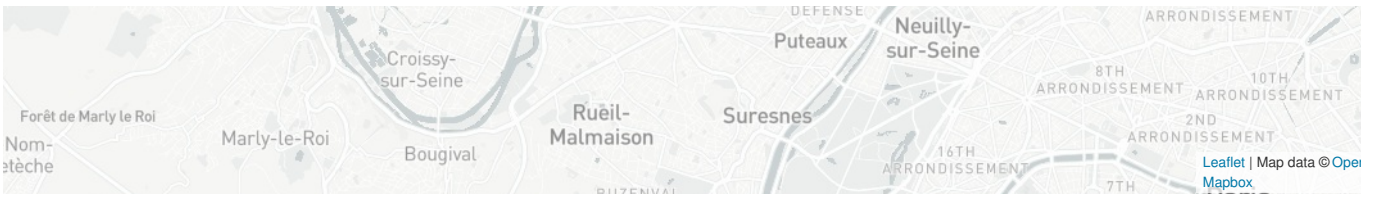


Energie & Climats Tempérés



Coup de Cœur des Internautes





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