


Schneider Electric HORIZON in Carros

by christophe bourgue / 2013-02-18 19:18:11 / France / 28631 / FR



Primary energy need :

68 kWhep/m².an

(Calculation method : RT 2005)

ENERGY CONSUMPTION

Consumption Range (kWhep/m ² .an)	Grade
< 50	A
51 à 90	B
91 à 150	C
151 à 230	D
231 à 330	E
331 à 450	F
> 450	G

Economical building (A, B, C) | *Energy-intensive building* (D, E, F, G)

Building Type : Office building < 28m
Construction Year : 2011
Delivery year : 2011
Address 1 - street : Zone Industrielle 70, 8ème rue 06510 CARROS, France
Climate zone : [Csa] Interior Mediterranean - Mild with dry, hot summer.

Net Floor Area : 5 436 m² SHON
Construction/refurbishment cost : 8 060 000 €
Cost/m2 : 1482.71 €/m²

Certifications :



General informations

Schneider Electric Horizon: actual energy performance, engaging, durable and guaranteed by contract of 40 kWh / m²/year final energy outside solar production!

The production of photovoltaic energy (220 GW) is equivalent to the energy needs of the building.

Built as part of a merger of Schneider Electric sites involving R & D and production, Horizon site is from a co-design involving the company and its staff, the architect and the builder. This building serving quality of life at work, is BBC certified by Certivéa.

The project summary:

- 3 floors of laboratories and offices for R & D(5436 m² SHON).
- Capacity: 350 people.
- 8 million euros overall budget, including photovoltaic.

- A design that minimizes environmental impacts and optimizes the geographical context.
- An exemplary building in terms of energy efficiency, which triggered a contract of "guaranteed results" with the constructor: 40kWh/m²/year in final energy outside solar output and continuous monitoring of performance levels.

SUB Award 2013 - this building contributes to "the city of the future":

As an exemplary building in energy efficiency, "Horizon" and its 40 kWh/m²/year meets the requirements of smart and connected buildings of tomorrow.

Sustainable development approach of the project owner

At the beginning of the 2000ies, just like every contractors, we looked into what a « smart » building really was, or rather what the market meant by "smart". Today, with « Horizon » we have an actual answer to that question as well as a tool for continuous improvement for

- energy efficiency,
- comfort and service towards our users,
- respect of the environment,
- our assets
- and control of our management costs.

For each of those expected performances, constant attention and mutual respect were the key factors for the success, in our work-groups « users-architect-experts-constructor » for optimum and global efficiency.

By cultivating attention and co-design, we benefitted from the best feedback, especially from the users, who became actors of the energy efficiency, thanks to our Building Management System tools.

Through this model project, our site of Carros becomes our greatest satisfaction, not only as a display for energy efficiency, but also as an actual proof that choosing partners for their expertise and excellency we can respond to the highest demands in terms of comfort and respect for the environment.

Architectural description

Located along the highway feeder and the Var, the project fits harmoniously into the existing industrial zone.

Its position, height and architectural treatment, both sober and urban, requalify the whole Schneider Electric local complex while creating a strong architectural signal at the roundabout.

The continuous frontage on the avenue is divided into three levels, punctuated by colorful perforated metal partition panels. Meant for aesthetic and sun breaking functions, these panels also provide protection against intrusions when the chassis will be open at night to cool down the building naturally. Open spaces naturally benefit from the orientation with a view on the "large landscape" which enhances the quality of use of workspaces.

The inner western façade organizes the main flows of each level. It is protected from solar radiation by a double skin stainless steel mesh and a photovoltaic roof overhang.

The connecting building link the old and new buildings together, upgrades the entrance to the site by its elegant architecture of stone, metal, glass and plants.

The lightness of treatment between the two constructions leads to the possibility to differentiate in terms OF uses and users over time. Finally, a curved roof with photovoltaic panels illustrates the fifth facade and fits perfectly into the surrounding hillside reliefs.

Building users opinion

A recent survey of residents indicates a high level of satisfaction.

Fruits of attention, tertiary spaces have an excellent level of comfort and a remarkable energy balance because of the architecture and technical solutions:

- Comfortable light thanks to large windows, various sunscreens that maximize the flow of light and light sensors and presence for artificial lighting.
- Acoustic comfort and thermal double glazing windows (Ug 1.1 W/m² / ° C), the acoustic ceiling (> 40 dBA), soils in carpet tiles (LW> 31dBA) and modular partitions of windows offices that provide a very good sound attenuation (> 35dBA)
- Ease of use due to self-management system of the building that allows the user to control itself (an area of 50m² open space or private office or meeting room).
- Lighting
- Sunscreens
- Heating and air conditioning

If you had to do it again?

The whole program would be redone in the same way: the project is extremely smooth, and the new building was a key asset in the management of change that was taking place at this moment in the company.

See more details about this project

<http://www.immocotedazur.fr/actualites,025/carros-schneider-electric-remporte,1310.html>

<http://www.enviroboite.net/bureaux-horizon-de-schneider-carros-06>

<https://www.construction21.org/france/data/sources/users/1594/docs/demarche-dd.docx>

Stakeholders

Stakeholders

Function : Contractor

SCHNEIDER ELECTRIC

Eric Cordailat responsable environnement et énergie du site 70, 8ème rue 06510 CARROS 06 33 42 39 49 eric.cordailat@schneider-electric.com

<http://www.schneider-electric.com>

Function : Construction company

GSE

Alain DUTTO Directeur du développement tertiaire 310 allée de Chartreuse 84000 Avignon adutto@gsegroup.com 04 90 23 85 00

<http://www.gse.com>

Function : Designer

ARCHE 5

Pierre-Louis COCHET Architecte 1 rue Chenevière 38240 Meylan arche5@arche5.com tél : 04 76 41 06 26

<http://www.arche5.com>

Function : Thermal consultancy agency

CEDRE

Thierry LAMOUCHE Directeur Place Sophie Laffitte 06560 VALBONNE thrry.lamouche@cedre-sophia.com

<http://www.cedre-sophia.com>

Function : Certification company

CERTIVEA

<http://www.certivea.fr>

Function : Designer

ARCHITECTES ARCHE5

Pierre-Louis Cochet - 38240 MEYLAN - arche5@arche5.com - +33 (0)4 76 41 06 26

<http://www.arche5.com>

Contracting method

Lump-sum turnkey

Energy

Energy consumption

Primary energy need : 68,00 kWhep/m².an

Primary energy need for standard building : 136,00 kWhep/m².an

Calculation method : RT 2005

Breakdown for energy consumption : After calculating the distribution RT 2005 is as follows:

- Heating 4%
- Cooling 21%
- Lighting 24%
- Auxiliary elec 12%
- Auxiliary Fan 39%

Real final energy consumption

Final Energy : 40,00 kWh/m².an

Envelope performance

Envelope U-Value : 0,60 W.m⁻².K⁻¹

More information :

The entire building insulation on facades, curtain walls and outside exterior joinery, will be provided by an external thermal insulation constituted of:

- A system of wall insulation from the outside includes a plaster armed with a fiberglass mesh applied to mineral wool panels, glued/pegged on concrete wall following standards

- Thermal: $U < 0.25 \text{ W / m}^2 \cdot \text{K}$.
 - Reaction to fire (following standard EL 13501.1): BS2-d0 according to manufacturer's fire PV
 - Fixing bonded suitable product (under Technical Opinion.)
 - Treatment of the impact of beam and tables doorways , windows (jamb and lintel) including insulation sub-coated aluminum profiles and adapted coating.
- Treatment of concrete parapets return sub-horizontal insulation coating.
- Included profiled aluminum sealing strip.
 - Organo-mineral coating thick siloxane

Hard external thermal insulation (fiberglass mat laid on), laying a coating organomineral thick composed of a sub-coat layer to strengthen the adhesion the organo-mineral coating, a finishing coating primer and organomineral thick.

- Impervious to runoff- Very good permeability to water vapor
- Very good resistance to shock
- Aspect matte mineral
- Particle size, color and decoration after following guidelines Architects samples on the spot
- Finish floated stone grain appearance

Heat transfer coefficient of exterior joinery door and windows:

- U glazing $U_g = \leq 1.10 \text{ W / m}^2 \cdot \text{°C}$
- Amounts aluminum thermal break: $U_w < 1.90 \text{ W / m}^2 \cdot \text{°C}$ for opening; In the absence of external sun protection factor sun glazing $> 35\%$;
- Factor global solar arrays EAST SOUTH WEST and $< 15\%$
- The windows are triple glazed type low-emission 4/16/4 argon

Building Compactness Coefficient : 0,65

Indicator : n50

Air Tightness Value : 1,70

More information

The energy performance of the building is based primarily on:

- Production of hot heat pump performance
- The space cooling by direct exchange of groundwater (up by chiller)
- Transmitters chilled beams type 4 tubes without auxiliary local
- Treatment of thermal bridges by external insulation
- The successful joinery with external solar protection low solar factor
- The use of wind in the valley for night cooling space between April and October
- An active sun protection on 3 sides
- Optimization of energy through the modules Building Automation Schneider Electric

Renewables & systems

Systems

Heating system :

- Geothermal heat pump

Hot water system :

- Individual electric boiler

Cooling system :

- Geothermal heat pump
- Chilled Beam

Ventilation system :

- Natural ventilation
- Nocturnal ventilation
- Free-cooling
- Double flow heat exchanger

Renewable systems :

- Solar photovoltaic
- Heat pump (geothermal)

Renewable energy production : 100,00 %

Smart Building

BMS :

BCWG Schneider Electric under vista

Smartgrid :

The building is smart compatible. Record under qualification for the creation of a smart grid at the business area level.

<https://www.construction21.org/france/data/sources/users/1594/docs/smartgridfr.pptx>

Environment

Urban environment

Land plot area : 48 751,00 m²

Built-up area : 45,00 %

Green space : 26,00

Located on the roundabout to access the business area of Carros, the new building of Schneider Electric sign the new face of the ZI.

The location of the building N / S along the public road serving the area Carros and along the banks of the river Var was a deliberate decision to give a double response "energy" and "image".

The building develops on public space (roundabout and access road), an urban façade flanking 3 levels punctuated by colorful cages sunscreen.

Is located on the front of all open spaces.

Tertiary plateaus overlooking the front have a soft light and a view Is so-called "large landscape" offered by the Var valley.

Service to the business area of Carros was valued by road improvements, the tram network and a pole multimodal exchange. More than 20 km from Nice, Carros has the second French International Airport.

Products

Product

Building Management Systems Schneider Electric

SCHNEIDER ELECTRIC

35 rue joseph monier 92500 Rueil Malmaison

<http://www.schneider-electric.com>

Product category : Management / Facility management

Management area by cutting consumption:

- lighting
- Heating, Air Conditioning
- Sunscreen
- Technical equipment

Light sensors, presence detection, rainfall and clocks programming.

Registration of all technical data in a central system that allows monitoring, historical analysis and possible changes in different setpoints.

The communication with users allowed to convey the idea that the energy performance requires a change in user behavior to be actors and not spectators the performance of an automated system.

VIZELIA

SCHNEIDER ELECTRIC

35 rue joseph monier 92500 Rueil Malmaison

<http://www.schneider-electric.com>

Product category : Management / Facility management

You follow in real time the energy consumption of your building, you identify underperformances, you check, with just a click, the effectiveness of your action plans.

You communicate with your employees and promote the adoption of best practices. Thanks to the energy management software, you can control your CO2 emissions.

Restitution of energy performance information to users accentuates their position as actors in energy efficiency.



Conditioning on ground water by diffusion and chilled beams

GSE / CVI / CEDRE /

Product category : Génie climatique, électricité / Ventilation, rafraîchissement

Air conditioning based on the use of water from the aquifer by pumping and reinjection into the aquifer associated exchangers water / water heat pump and high efficiency distribution and hot and cold air treatment-by a system of tubes chilled beams 4 ceiling.-air treatment plants 4 air tubes associated with energy recovery from exhaust air.

Chilled beam scattering by a CTA based on pressure / volume makes a fresh atmosphere in the cooling mode and contributes to the comfort of users workspaces



Sunscreens

Product category :

In heavily exposed to solar radiation area, insulation is key for the thermal equilibrium of the building. These protections are established:

- A passive external insulation 20cm
- A canvas stretched steel high pressure levels L1 L2 of the west facade
- Shading of the ground floor of the west facade and the south gable driven GTC
- Blinds textile facades is controlled by GTC
- The photovoltaic roof with a large hat on the west façade to optimize production and protection when the sun is at its zenith

The orientation of the building is a compromise between photovoltaic and thermal impacts minimization south gable. Sunscreens also affected the organization of space as the west façade does not fully protected type light first day and therefore corridor lies to the west, the workspaces are located on the front which is' is exposed to radiation in the morning (protections textile blinds.

Security system buildings

schneider electric

35 rue joseph monier 92500 Rueil-Malmaison

<http://www.schneider-electric.com>

Product category :

The building has a system of automatic fire detection (according standard R7) and a security system, intrusion detection, CCTV camera, access control and gate access cards and single person.

The implementation of these systems has changed the behavior of residents by making each player safety data on the site (wearing the badge / access control / management of sensitive data)

Costs

Construction and exploitation costs

Global cost : 8 060 000,00 €

Reference global cost : 10 247 000,00 €

Renewable energy systems cost : 250 000,00 €

Energy bill

Forecasted energy bill/year : 70 000,00 €

Health and comfort

Water management

Consumption from water network : 300,00 m³

The groundwater used by the air conditioning system is fed back into the water and therefore not counted in water consumption.

Indoor Air quality

Both air treatment systems on the roof ensure continuous renewal.

Moreover, between April and October motorized opening system (controlled by GTC) uses natural air conditioning refreshing the concrete slab and ensuring renewal

Analyses in July 2012:

- concentration of 0.010% CO₂

- concentration of 0.025 mg/m³ of formaldehyde

Carbon

GHG emissions

GHG in use : 1,99 KgCO₂/m²/an

Methodology used :

Methodology used by the Carbon footprint association

Building lifetime : 40,00 année(s)

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