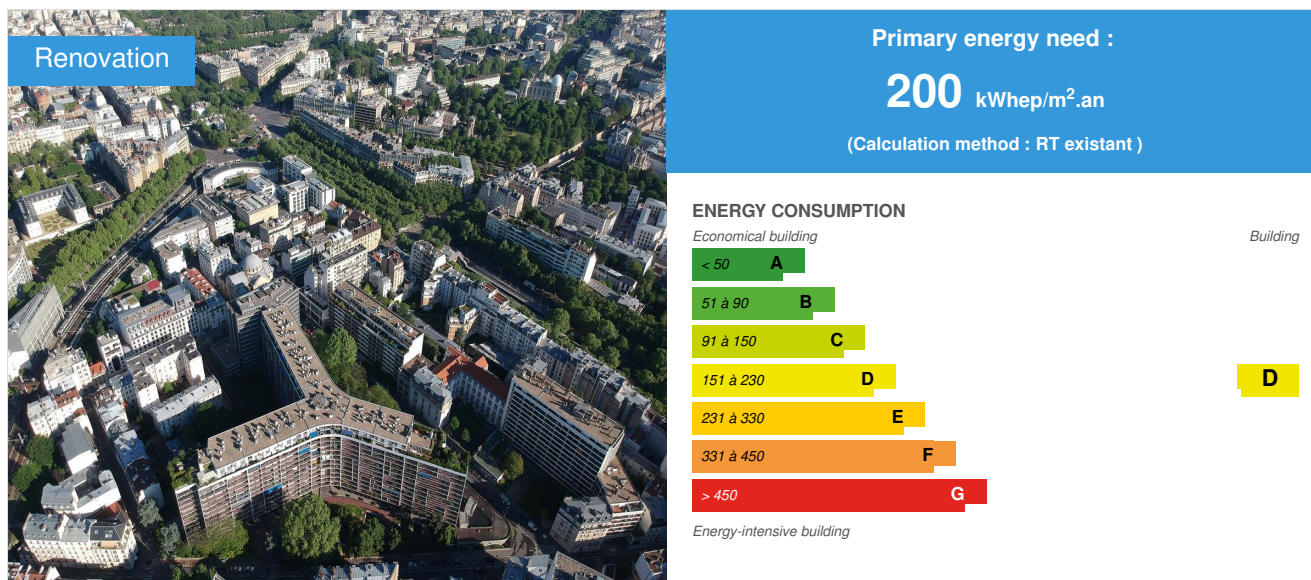


Condominium Le Méridien in Paris

by Jean-Baptiste Quelquejay / 2019-02-18 17:36:42 / France / 11249 / FR



Building Type : Collective housing < 50m
Construction Year : 1966
Delivery year : 2019
Address 1 - street : 75014 PARIS, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 30 275 m²
Construction/refurbishment cost : -15 585 €
Cost/m² : -0.51 €/m²

Proposed by :



General information

In 2017 the condominium decided to launch a project to improve its energy efficiency with the following main objectives:

1. **Improve comfort temperatures in dwellings**, as those on south-facing facades were temporarily overheated, and those on north-facing facades had temporary or permanent heating deficiencies.
2. **Reduce energy costs by 35%** to generate € 185,000 / year savings.
3. **Look for breakthrough innovative solutions that save more than they cost**, so as not to increase annual expenses.

The break comes from the fact that the approach is to act first on the regulation and the comfort to have fast results as of the 1st year, almost without spending anything, rather than to realize large expenses of isolation with important financing and very long-term return on investment.

The approach chosen is to proceed in two phases:

- **1st phase 2017-2019** (over 2 fiscal years): Reduce energy expenditure by around 20%, which represents a saving of 100,000 € / year.

Start by making small investments in tens of thousands of euros, which bring in more savings over the year than the investments made:

- o Stay within the current annual budget (no increase).
- o Get a quick ROI of 3 to 12 months.
- o Get financial help.
- o Generate significant savings for later major work in Phase 2.
- o In the first phase the projects focused on 3 points of Article 138-2 of the decree n ° 2012-1342 of December 3rd, 2012:
 - Improvements to the lighting installations of the common areas (LEDs and presence detectors).
 - Installation, regulation, balancing or replacement of heating systems, domestic hot water (predictive control of heating control and adaptation of production to consumption).
 - Insulation works of collective heating networks, and domestic hot water (lagging).
- **2nd phase 2020-2025:** Reducing energy expenditure by around 20%, which represents savings of around 85,000 € / year.

Establish a multi-year plan of works with large investments in the hundreds of thousands of euros, which will be financed by the savings generated in the first phase.

In the 2nd phase the work should focus on:

- o Renovation and thermal insulation of the roof terrace.
- o Upgrading the rooftop terrace by exploiting solar panels.
- o The requirement to generalize the replacement of single glazed windows with double-glazed windows.

Situation in February 2019:

- The first phase achieved its objectives by acting simultaneously on 3 levers:
 - o Act on the central regulation of heating to benefit from the energy provided by the variations of the meteorological conditions, by using the thermal inertia of the building.
- This has been achieved with new technologies that make predictive regulation of collective heating, without work.
- o Adapt primary energy production to distribution in heating networks.
- This was achieved by connecting the regulators of the primary production cascade to the regulators of the 2 north and south distribution circuits.
- o Constantly measure the comfort temperature in about 60 dwellings, to characterize the comfort situation of the building, and verify that the improvements made in the context of the previous point above, have achieved their objectives.
- This was achieved by the deployment of new-generation radio-thermometers / hygrometers (IoT connected objects) in reference apartments, and in apartments where discomfort was reported.

Regarding the financial aspect, the target has been reached since the total savings achieved were € 15,585 higher than the expenses. And every year the recurrent economy varies between 60.000 € / year and 90.000 € / year, which makes it possible to continue financing other works of improvement of the energy efficiency.

Sustainable development approach of the project owner

The approach chosen by the syndicate of co-owners in terms of improving energy efficiency: It consists in replacing part of the heating energy consumed (CPCU steam network) by the combined use:

- the thermal inertia of the building, ie its ability to accumulate and lose heat over time;
- and present and future heat input, related to weather conditions (outside air temperature, sunshine, wind, rain, building orientation).

This is achieved only by connecting the central heating control to a computer center, which makes the **building "connected", "smart", and "thrifty"**. The connection principle is very simple, does not require any work, and allows operation in complete safety even in case of break of the connection with the computer center. **Regarding mobility, electric vehicles can be recharged in our car parks:**

Since September 2016, the electrical infrastructure allowing the connection of charging stations in our 4 floors of parking has been realized (decision of our General Meeting of March 2016).

Since this date each year, the owners have installed on their parking spaces terminals or charging points for electric vehicles (cars, motorcycles, etc ...). Different models of power and price are proposed by our installer the French company Parknplug, which manages the applications for subsidy of the ADVENIR program, up to 600 € for 50% of the cost of the connected terminal.

The electricity consumed by each charging station is invoiced individually to each owner, thanks to a system of under-metering electricity consumed. This allows to individualize the electricity charges related to the charging of electric vehicles.

Parknplug's technology also intelligently pools vehicle charging capabilities to meet the simultaneous needs that can exceed the maximum instantaneous power available. For now we have not needed to add extra electric power for electric vehicles.

Architectural description

The Y-shaped building is composed of more than **500 main lots including 480 dwellings**. It is heated thanks to the heat network of the City of Paris, operated by the CPCU (Paris Company of Urban Heating), and managed by the Trustee Loiselet & Daigremont. It has several facades of various orientations, and 2

distribution circuits of hot water for collective heating, one for the north and north-west facades, and the other for the south and south-west facades, which makes full use of the possibilities offered by the predictive regulation of outdoor temperature and sunshine, depending on the orientation of the apartments.

Building users opinion

In terms of thermal comfort, the project has made it possible to correct the discomfort associated with a lack of heating in homes located on the north and north-west facades, and to reduce the discomfort associated with the occasional overheating of buildings on the south and south-west facades. West, while achieving significant savings on the energy bill.

If you had to do it again?

Implement the ATIC system (inside temperature of comfort measurements) faster from the outset in order to characterize the zones of discomfort more quickly, and not wait for the installation of the CPR (Predictive Control of the Regulation) system before putting ATIC .

See more details about this project

<http://www.meridiendeparis.info/site/>

<http://www.meridiendeparis.info/site/spip.php?breve150>

<http://www.meridiendeparis.info/site/spip.php?breve149>

Stakeholders

Contractor

Name : Syndicat des copropriétaires

Contact : Jean-Baptiste Quelquejay - jb.quelquejay (a) gmail.com - +33 (0)6 07 70 20 30

<http://www.meridiendeparis.info/site/>

Construction Manager

Name : Loiselet & Daigremont

Contact : Erik Kirchner - erik.kirchner (a) l-d.fr - +33 1 44 08 82 00

<https://www.loiselet-daigremont.com/>

Stakeholders

Function : Company

EFFICAP Energie

Eric Lenne - eric.lenne (a) efficap-energie.com - +33 (0)6 88 20 06 31

<http://www.efficap-energie.com/>

Installed and supplied: The predictive conduct of collective heating, the production of heat according to the consumption of heating circuits, and the measurement of comfort temperatures by radio-thermometers.

Function : Company

CPCU

Madame Valérie Marteau - valerie.marteau (a) cpcu.fr - +33 (0)1 44 68 67 65

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

Facilitated the installation of the system and access to consumption data to refine the predictive behavior setting, and participated in the financing of the system and the evaluation of its performance.

Function : Company

Connit

Valérie Balavoine - valerie.balavoine (a) connit.fr - +33 6 28 37 90 31

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

Supplier of Ecosondes (Thermometers - Hygrometers) connected in Sygfox technology.

Contracting method

Other methods

Energy consumption

Primary energy need : 200,00 kWh/m².an

Primary energy need for standard building : 240,00 kWh/m².an

Calculation method : RT existant

CEEB : -0.0026

Breakdown for energy consumption : Heating: 4.165.506 (kWhEF / year) Domestic Hot Water DHW: 1.712.000 (kWhEF / year) Common electricity: 402.854 (kWhEF / year)

Initial consumption : 228,00 kWh/m².an

Real final energy consumption

Real final energy consumption/m² : 182,00 kWh/m².an

Year of the real energy consumption : 2 016

Envelope performance

More information :

The UBAT coefficient = 2.806, as indicated on page 46/113 of the Energy Audit Report communicated as an attachment.

More information

The figure for the new primary energy consumption is the minimum (12%) that we will get. The expected gain is between 12 and 17%. This is not an absolute value compared to the initial situation, since we have endeavored to improve the comfort of the northern part of the condominium by increasing the water law by 5 ° C and thus obtain an increase temperature of 2.5 ° C (initially 17 ° C in some apartments). This renovation has allowed a gain in consumption, but especially a better comfort of the occupants. (initial figures: primary energy consumption: 228 kWh / m² / year, final energy: 207 kWh / m² / year) The thermal study to confirm the energy results is in progress.

Renewables & systems

Systems

Heating system :

- Urban network

Hot water system :

- Urban network

Cooling system :

- No cooling system

Ventilation system :

- Natural ventilation

Renewable systems :

- No renewable energy systems

Smart Building

BMS :

The SMART BUILDING functions mainly concern 2 technological domains:

- The predictive behavior of the collective heating temperature, which takes into account the weather forecast, the building's exposure, its geographical location, its thermal inertia, and its energetic signature.
- Real-time monitoring of the temperatures of about sixty reference dwellings, to measure the impact of measures to improve the comfort and energy efficiency of the building.

Users' opinion on the Smart Building functions :

The occupants were informed of the technologies implemented during the General Assemblies of 2016, 2017 and 2018, and are satisfied with the results obtained.

Environment

Urban environment

Land plot area : 14 300,00 m²

Built-up area : 30,00 %

Green space : 10 000,00

- The building is located in an urban area, where telecommunication networks very effectively cover connected objects that are deployed in Sygfox technology.
- No impact of installed systems on the urban environment.

Products

Product

EFFICAP CPR (Predictive management of collective heating control)

EFFICAP Energie

Eric Lenne - eric.lenne (a) efficap-energie.com - +33 (0)6 88 20 06 31

<http://www.efficap-energie.com/>

Product category : Management / Others

Predictive control system, which acts on the central control of the flow temperature of collective heating circuits. The cost of the system is fully funded by some of the savings on heating energy. The supplier guarantees that the cost does not exceed one third of the savings. On our project, the cost of the system is of the order of 10% of savings.

The system was very easily accepted by all stakeholders.

Even the energy supplier has understood the benefit of saving on the amount of energy consumed, rather than having to agree to price reductions on the unit price of energy.

EFFICAP ATIC (Improvement of Comfort Interior Temperatures)

EFFICAP Energie

Eric Lenne - eric.lenne (a) efficap-energie.com - +33 (0)6 88 20 06 31

<http://www.efficap-energie.com/>

Product category : Management / Others

The system consists of deploying connected objects that measure in real time the temperature and hygrometry (and CO2 optional) of the apartments representative of the different facades of the building.

building. These are boxes the size of a cigarette pack. They can also be deployed in areas of temporary or permanent discomfort, to diagnose the level of discomfort and help determine the cause, and then fix it. The system makes it possible to analyze the initial comfort level, and then to measure over the months and years, the improvements related to the different project to improve the comfort and energy efficiency of the building. It also makes it possible to measure whether the comfort contract with the heating engineer has been reached.

The system has been very well accepted, especially by people in discomfort (too cold or too hot) insofar as it allows first to make a statement on reliable measures, then to implement improvements and to check the effectiveness.

Costs

Construction and exploitation costs

Cost of studies : 6 000 €

Total cost of the building : 49 615 €

Subsidies : 65 200 €

Energy bill

Forecasted energy bill/year : 469 000,00 €

Real energy cost/m² : 15.49

Real energy cost/Dwelling : 977.08

Health and comfort

Water management

Consumption from water network : 35,00 m³

Water Consumption/Dwelling : 0.07

City water supply.

Counting at the general counter.

Comfort

Health & comfort :

The general comfort of the occupants of the building has been improved with 4 results:

- The occupants of the south-facing facades have significantly fewer periods of overheating, the overheating is less important, and it is no longer necessary to open the windows long enough to evacuate the excess temperature.
- The occupants of the façades exposed to the north were mostly under-heated. The project has raised the comfort temperature of these apartments by several degrees.
- The energy savings provided by the predictive management of the central heating control system have led to significant savings on district heating, despite the increase in heating on the apartments of the north facades which were underheated.
- The drop in consumption has reduced the fixed premium of the CPCU heat network subscription.

Carbon

GHG emissions

GHG in use : 41,00 KgCO₂/m²/an

Methodology used :

Initial energy balance

Building lifetime : 53,00 année(s)

Contest

Reasons for participating in the competition(s)

Notre copropriété "Le Méridien de Paris" doit son nom au fait qu'elle est située à 500 mètres au sud de l'Observatoire de Paris, et très exactement sur le méridien de Paris qui est le méridien passant par le centre de l'Observatoire de Paris et situé à 2°20'13,82" à l'est de celui de Greenwich.

Elle a été construite en 1965-1967 par les architectes Arthur-Georges Héaume et Alexandre Persitz sous la maîtrise d'ouvrage de John Arthur et Tiffen, et constitue un élément remarquable du patrimoine architectural de Paris et notamment du XIV^{ème} arrondissement.

Nous avons célébré ses 50 ans en 2016.

Des personnes célèbres ont habité au Méridien de Paris :

- Jacques Brel.
- Georges Brassens.
- Raymond Peynet et sa famille (Les amoureux de Peynet <http://www.peynet.com/vf/pages/artiste.php>)

Des films sont régulièrement tournés au Méridien, dans les halls, le jardin intérieur, les appartements, et même les rampes de parking, autant d'endroits propices tant aux scènes romantiques qu'aux scènes de ménage ou aux cascades de voitures.

Building candidate in the category



Santé & Confort



Prix du public



Prix des Etudiants

