Ampère e+

by Morgane d'Alderete / 2017-05-23 16:03:00 / Frankreich / 19078 / FR

Primary energy need :

96.48 kWhep/m².an

(Calculation method :)

ENERGY CONSUMPTION

Economical 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 **A**

Building Type : Office building < 28m
Construction Year : 1980
Delivery year : 2016
Address 1 - street : 40 Rue Henri Regnault 92400 COURBEVOIE, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 15 000 m²
Construction/refurbishment cost : 34 737 000 €
Number of Work station : 1 000 Work station
Cost/m2 : 2315.8 €/m²

Certifications :

General information

The 15,000 m² Ampère e+ office building reflects the views of the Sogeprom group: sustainability & innovation while putting the user at the heart of the system. The rehabilitation of the Ampère building in Ampère e + introduces avant-garde intelligent features: energy system, environmental performance and occupant well-being.

Ampère e + demonstrates Sogeprom's philosophy of implementing sustainable innovation in order to create both real estate value and usage value. Ampère e+ was also chosen by the European Commission as a model site for the typology of tertiary buildings in the framework of "ELSA" (Energy Local Storage Advanced system).

Its many certifications demonstrate its innovative and sustainable aspects:

- BREEAM Very Good
- NF HQE Excellent

- BBC Effinergie Renovation
- Circular economy approach and "Cradle-2-Cradle (C2C) inspired building" label
- Double Wellness Certification: WELL Core and Shell and WELL Interiors

Watch the video of Ampère e+, international winner of the Smart Building category in the Green Solutions Awards 2017

Sustainable development approach of the project owner

As a promoter committed to reducing the ecological footprint of the building, Sogeprom adheres to the values promoted by the Grenelle Environment Forum and pushes each of its projects to go beyond the regulatory framework. Ampère e + is part of this virtuous approach and achieves excellence in order to highlight the promoter's know-how and offer a high level of comfort to its users. This double objective was set at the outset of the project to rehabilitate the Ampère tower in Ampère e +. The emphasis on the energy performance of the building is therefore intrinsic to the project and the investment of the stakeholders throughout its realization has made it possible to achieve a high level of requirements in line with Sogeprom's ambitions, demonstrated on each of its projects. Ampère e+ is in line with the other realizations by the Sogeprom. For example, a 109-unit program was built in Montreuil in Seine-Saint-Denis, where consumption is reduced by 33.8% compared with the theoretical thresholds of already very restrictive regulations, or the Campus Val de Fontenay where consumption Of energy is reduced by 30%.

Architectural description

The deep restructuring of Ampère e+ has made the choice of a new configuration of living spaces along the urban boulevard, the creation of loggias with three hanging gardens with accessible balconies, or double height inner lounges that create a transparency and relaxation areas. The common areas of the ground floor and garden level favor direct and indirect natural light to give a warm and pleasant working atmosphere. The use of a breathable façade with a comfortable opening for each frame allows natural ventilation of the offices.

Building users opinion

Pierre Sorel, General Manager, SOGEPROM: "This building is the perfect concretization of our business project both because it shows our know-how to imagine the office building of tomorrow, and also because our The desire to place the user at the heart of his professional environment in a virtuous building is perfectly realized. Since our move in, we realize that the provisions put in place strongly contribute to the improvement of the well-being of the user. "Sandra Assad Development Manager:" This project has targeted very ambitious objectives and we have achieved them, thus helping to improve the value of the assets from an environmental and a heritage point of view. He has also contributed greatly to the improvement of the use value and thus put all the employees in the best possible conditions to develop our company. "Marianne Schrever HRD:" Working conditions, light in the premises, indoor comfort, air quality and high connectivity within the building allow us to see a few months after our move in that they contribute In a very important way to the good general atmosphere and a very positive attitude of each of the employees present in the company. "

If you had to do it again?

Christophe Dumas, Technical and Innovation Director, SOGEPROM: "As part of improving the indoor air quality of the Ampère e + building, Sogeprom worked with the start-up WALYZEO for their first project. The wall WALYZEO is a bio filter which consists of a vertical hydroponic wall gathering a range of specific plants. It functions as a living air filter, eliminating common internal contaminants and thus improves air quality. However, this innovation could not be implemented due to a lack of hydrometric stability in the premises, which could have caused a risk of internal condensation due to the ceiling heights of the building. However, Sogeprom, which is convinced of the contribution of the product carried by WALYZEO, continues to work with them to install this wall on future projects."

See more details about this project

https://www.construction21.org/france/articles/fr/laureat-smart-building-des-green-solutions-awards-2017-ampere-e-france.html
http://www.groupe-sogeprom.fr/sogeprom-a-emmenage-a-ampere-e/
http://www.immoweek.fr/bureaux/actualite/simi-sogeprom-veut-faire-boule-de-neige-restructuration-dampere-video/
http://www.ladefense.fr/fr/tour/ampere-e
http://www.a234.fr/

Stakeholders

Stakeholders

Function : Designer

Architecte - Ateliers 2/3/4/

Jean Mas architecte associé, Fabienne Garrigues architecte directrice de projet

http://www.a234.fr/
design

Function : Other consultancy agency

INEX

Frédéric Fournier frederic.fournier@inex.fr - 01 49 88 81 53

http://www.inex.fr/
BET fluids

Function : Other consultancy agency

ARCORA

Vincent Morael vi.morael@arcora.com 0650493312

http://www.arcora.com/
Design office facades

Function : Structures calculist

PEUTZ

Guillaume COLLET (g.collet@peutz.fr) - 01 45 23 05 00

http://www.peutz.fr/
Acoustician, acoustic comfort

Function : Thermal consultancy agency

Etamine

Thomas Maignan thomas.maignan@etamine.coop

http://www.etamine.coop/
BET HQE / environmental

Function : Environmental consultancy

Green Soluce

Ella Etienne ee@greensoluce.com

http://www.greensoluce.com/
Advice and support for the implementation of innovations

Function : Contractor

SOGEPROM

http://www.groupe-sogeprom.fr/

Function : Thermal consultancy agency

Function : Environmental consultancy

Function : Environmental consultancy

Contracting method

Separate batches

Type of market

Table 'c21_germany.rex_market_type' doesn't exist

Energy

Energy consumption

Primary energy need : 96,48 kWhep/m^2.an

Primary energy need for standard building : 161,29 kWhep/m^2.an

Calculation method :

Breakdown for energy consumption : Heating: 32.433 Cooling: 15.26 Ventilation: 36.045 Aux: 3.507 Lighting: 13.499 PhotoV: 4.230

Initial consumption : 149,00 kWhep/m^2.an

Real final energy consumption

Final Energy : 250,00 kWhef/m^2.an

Envelope performance

Envelope U-Value : 1,06 $W.m^{-2}.K^{-1}$

More information :

One of the main components of the envelope is the high-performance glazing: double glazing (6-16-4 SUNGUARD SUPERNEUTRAL) Curtain wall envelope in triple glazing breathable with integrated blind. Opaque openings allow natural ventilation of the building. The insulation is entirely from the outside. Patios have been dug on the garden level to bring natural light to the meeting rooms.

Building Compactness Coefficient : 0,82

Indicator : n50

Air Tightness Value : 1,45

Renewables & systems

Systems

Heating system :

- Urban network
- Low temperature floor heating
- Radiant ceiling
- Fan coil

Hot water system :

- Urban network

Cooling system :

- Urban network
- Fan coil
- Radiant ceiling

Ventilation system :

- Natural ventilation
- Double flow heat exchanger

Renewable systems :

- Solar photovoltaic

Renewable energy production : 4,30 %

Other information on HVAC :

To achieve a high indoor air quality, airflow rates were calculated at 36 m3 / h per person instead of 25 m3 / hr. This ventilation is provided by two air handling units (AHUs) located on the roof of the building. CTAs have rotary heat exchangers with a recovery rate greater than 80%. The airtightness of the grids is of class B grade. Glass fills are composed of clear, lightly emissive double glazings on the inner side (VEP cover technology) and on the exterior side of a single extra-clear outer glazing, The whole constituting a breathable thin double skin. Transmitters: the heating and cooling of the office air is achieved by means of radiant ceilings as well as fan coil units. Air extractors: The extractors are located on the R + 10 terrace or in a technical room on the garden level. From the extractor, a galvanized steel extraction network is provided. The extraction is carried out by means of high pressure drops. The air intake is from the circulations that lead to the sanitary blocks. If the extraction flow is low (<100 m3 / h), the air intake is decompressed under the doors. Otherwise, ceiling transfer ducts and grids are provided between the sanitary blocks and the circulations.

60 kWc

Solutions enhancing nature free gains :

Système Sun tracking : commande les stores extérieurs, récupération des apports solaires par un ratio de vitrage important amenant lumière et apports solaires.

Smart Building

BMS :

The building Ampère e + is equipped with a last generation BMS, gathering all the orders and technical information for the efficient management of the building. The integrated system will allow to monitor the following consumptions:
- Heating (hot water)
- Cooling (chilled water)
- Lighting
- Other types of power supply: fan coil units, BECS, Ventilation fans
- City water: Under divisional counts for:
o General services
o Office compartments
o Watering green spaces

Beyond these classic features, a smartphone application dedicated to building was specifically developed for Ampère e+. This is the link between users and the BMS by providing users with the option to customize their comfort parameters. Thus, workstations can be tailored to the needs of each occupant. For example, the employee can adapt the intake to natural or artificial light, but also the temperature of his office according to his own need. The application has the particularity of being able to integrate functionalities complementary to each user: reservations of meeting rooms, concierge, declaration of incidents, impressions ...

Ampère e + pushes the intelligent dimension even further thanks to a precursor energy system, unique In Europe and worldwide, to produce, store and control the building's energy as closely as possible to the needs and behavior of building users:
- On-site photovoltaic ENR production and OTIS REGEN next-generation elevators that generate energy By the principle of kinetic energy. "B4B" ("Battery For Battery") system, which consists in using used batteries of electric vehicles installed in a technical room of the Ampère e+ building (between 2 and 12 batteries Possible) to load energy at the most appropriate time for the building N depending on the cost of energy on the market.
- "Energy Management System" called "BEMS" ("Building Energy Management System"), which constitutes the smart brick of the system, allowing to integrate and control the energy remotely through the cloud technology of "Webservices". The configuration of the BMS has been specifically adapted so that the BEMS can send instructions to it. Thus, the energy consumption of the building is optimized for the user, who benefits from it both economically with a reduction in his bill, as well as in terms of the environment and comfort. The system also creates value for the investor-owner of Ampère e +: in fact, by relying on such an experimental system anticipating what the reality of real estate and the agile city - sustainable and intelligent - will be tomorrow, It guarantees that its building product will always be topical plus it will advance in its life cycle. Buildings such as Ampère e +, equipped with an energy storage system coupled with intelligent control, will be able to render services to the network for remuneration through an "aggregator". This type of shared network operation of buildings will be multiplied. Thus, Ampère e+ finds its intelligence not only in the successful integration of different systems, but also in being ahead of the market.

It should also be pointed out that this precursor energy system is part of the ELSA (Energy Local Storage Advanced System) project. The European R&D project, led by a consortium of leading industrial groups and research centers (Bouygues Energie & Services, Renault-Nissan, UTRC research subsidiary of the UTC group and the German and British universities), is emblematic of the program H2020 from the European Union and funded by the European Union for 15 million euros. The only building to have been selected for the tertiary typology, Ampère e+ is one of the 7 European test sites to allow the emergence of a state-of-the-art technology with a high replicability potential in building intelligence. French and European champion of smart buildings, Ampère e+ is therefore truly emblematic and precursor of future smart buildings.

Smartgrid :
Creation of Smart Grid and heat networks for the implementation of economies of scale and production and sharing of surplus energy locally.

Users' opinion on the Smart Building functions : Christian Després, Chief Accountant, Sogeprom: "Ampère e+'s big progress lies in the multiplicity of collaborative spaces, which facilitates the transversality between services. This helps to break down the barriers and silo effect. The possibility of being able to work in a team, in open spaces, in bubbles (micro meeting rooms), in the meeting rooms of the floors and on the garden level, and even in convivial spaces makes ostensibly easier Exchanges between functional and operational staff and strengthens team spirit. It is a real progress in our daily comfort at work." Christophe Pichot, Head of the Tertiary Program, Sogeprom: "The mobile application Ampère, deployed on smartphones given to all employees has been designed to bring comfort to users. It was the use and only the use that guided his conception. After a very rapid training, the very fact that all the employees of Sogerom manipulate it and use it on a daily basis is the best proof that it is a real success. All that remains is to make it work with the LiFi ... "Laurence Blondeau, Assistant, Sogeprom:" Before the move in, we all had a little apprehension to work in open-space. It happens that by the organization of spaces and by the acoustic quality of the volumes which is absolutely remarkable, all our fears have been erased. One can even say that one takes even more pleasure to work together than before. Communication is very much facilitated between us. Moreover, the offices are very bright without being dazzling, which reinforces the feeling of comfort."

Environment

Urban environment

Land plot area : 3 650,00 m^2

Built-up area : 36,20 %

Green space : 550,00

The Ampère e+ building is located in the first European business district, La Défense. This district constitutes a park of more than 3 million m² of offices. La Défense is: - 3,600 companies, 15 of the world's 50 best - 1,500 head offices - 180,000 employees - Europe's largest public transport complex with 500,000 passengers per day - 230,000 M² of local shops, 130 000 of which are located in the Quatre Temps shopping mall

Products

Product

B4B

Groupe Renault

T.Orsini

http://elsa-h2020.eu/Who_we_are.html

Product category : Table 'c21_germany.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 = '29'

As part of a partnership between Renault, Nissan and Bouygues Energies and Services, the B4B project (Battery for Building) is a project to reuse second-battery batteries in buildings. The systems thus developed make it possible to:

- Curb the peaks in consumption
- Store intermittent electricity (photovoltaic or wind)
- Supply electricity in the event of a power cut
- Decrease the average consumption of electricity from the network
- Participate in a set of network balancing services

Christophe Desray, Asset Manager of the building, Primonial: "This system of energy storage by means of batteries of second life brings Ampère e+ back in the generation of environment-friendly buildings. Beyond the image it brings, it is an increasingly important argument for the commercialization of offices with companies increasingly giving place to the CSR component of their policy, and for us, lessor, Is a major argument."

Patrick Levent, Head of Operations Development, Sogeprom: "To be able to explain to our investor clients and their tenants that the reuse of electric vehicle batteries, integrated into the building as an energy reservoir, Impact on the environment as well as on their energy bill, is still surprising for many. It then becomes clear when one explains the coherence that this has with our policy of improving the asset's value."
David Martineau, Site Facility Manager, Sodexo: "Very dubious at the beginning when we were told the concept, we were totally convinced when we saw the equipment and explained how it works."

LIFI

Lucibel

lifi@lucibel.com

http://www.lucibel.com/lifi-haut-debit

Product category : Table 'c21_germany.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 = '29'

Lifi uses modulated LED light to transmit information (video, sound, geolocation) to a dedicated receiver that decodes it on a computer, tablet or smartphone. Installation in 16 meeting rooms of 20m² on average in the Ampère e + building.

The deployment of this innovation makes it possible to reduce the environmental impact of the Société Générale Group in two ways:
- during installation, the use of this technology using traditional lighting networks eliminates the consumption of copper cables and Thus the gray energy associated with this emission station for the building
- during operation, LiFi luminaires not using conventional network wiring for the connectivity service do not impose an air-conditioned technical room, Economy of 25kwh / m² / year

Richard Jimenez, Head of Information Systems, Sogeprom: "The communication throughput associated with the bandwidth, all with optimal security of communications, completely amazed me. The in situ tests, especially with visitors, have finally convinced me of the merits of this innovation."

Christophe Dumas, Head of Innovation Sogeprom: "This innovation is on the one hand very avant-garde in its concept and it responds very strongly to a need, as much by the security of information as by their power or By the health component. The implementation of LiFi in Ampère e+ was the result of a three-year collaboration with Lucibel, which enabled us to implement immediately and operationally as soon as we moved in. And above all, this innovation perfectly meets one of our major concerns in the development of office buildings, namely the priority given to use."

Edouard Lebrun, Director of Development, Lucibel: "The common vision we had on the use of Sogeprom enabled us to confirm our strategic choices and, on the other hand, to benefit from the Ampère e+'s field of experimentation full size. The state of mind displayed by Sogeprom in the field of research and innovation is therefore remarkable."

TOPAGER

Topager

lucie@topager.com

http://topager.com/

Product category : Table 'c21_germany.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 = '29'

Topager designs vegetable gardens and biodiversity refuges, integrating your needs and the specific conditions of your site.

Fabienne Garrigues, Project Architect, Workshop 2/3/4: "Our desire to integrate external and verdant living and living spaces into the project existed from the beginning of the project. Working with Topager to develop a real urban vegetable garden was still pushing the limits of use, which was in line with the philosophy that the Sogeprom promoter had asked us to develop on the project."

Soraya Terki-Hassaine, Program Manager, Sogeprom: "The promoter's desire was to take advantage of the magnificent landscaped spaces to create spaces for exchanges and conviviality, or even work. Topager's contribution to the educational component has allowed us to reach the initial objectives, creating a real passion for different cultures."

Carge Hurel, Communication Officer, Sogeprom: "Beyond the aesthetic character of the garden, beyond the pedagogical aspect brought by Topager, the urban vegetable garden also allows us to develop internal and external communication operations. And that's great! We have here an extraordinary tool of cohesion and sharing that allows everyone to enjoy nature while being in the middle of the towers of La Défense."

BIOORG

Bioorg

info@Bioorg.be

http://bioorg.be/

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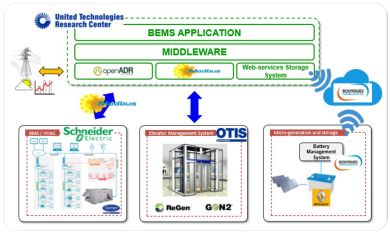
BIOORG has developed a revolutionary technique to clean up harmful and harmful pollution in buildings. This technique places positive organisms that eliminate visible and invisible pollution on their own. Organizations produce their actions both in accessible spaces and in "hidden" spaces. Indeed, 80% of other places are also treated. This treatment does not use chemicals.

Building Energy Management System

http://elsa-h2020.eu/Who_we_are.html

Product category : Table 'c21_germany.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 = '29'

On the basis of data collected by the various sensors installed in the building, the BEMS allows the monitoring and control of all electrical and mechanical equipment and services such as heating, ventilation, , Temperature, power supply, lighting, safety or fire protection systems, plumbing, video surveillance.



OTIS REGEN

Otis

Otis

http://www.otis.com/site/fr/pages/ReGen.aspx

Product category : Table 'c21_germany.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 = '29'

The ReGen Drive is a new "regenerative" drive system for your lift. This innovative system restores the energy generated by the elevator to the electrical network of your building.

Costs

Construction and exploitation costs

Global cost : 115 000 000,00 €

Reference global cost : 7 500,00 €

Renewable energy systems cost : 744 000,00 €

Global cost/Work station : 115000

Reference global cost/Work station : 7500

Cost of studies : 4 212 000 €

Total cost of the building : 34 737 000 €

Health and comfort

Water management

Consumption from water network : 19,00 m^3

Consumption of harvested rainwater : 294,00 m^3

Water Self Sufficiency Index : 0.94

Water Consumption/Work station : 0.02

Calculation by intake estimate and daily needs over one year.

Indoor Air quality

The selection of building materials has a strong impact on the quality of the indoor environment, and consequently on the health and well-being of people. The indoor environment includes dust, gases, temperature, humidity, materials and luminosities. Studies have shown that indoor air quality in urban areas is often worse than outside. This is why Ampère e + has introduced a range of innovative materials and innovative air treatment to optimize the quality of the interior environment of the project. Indeed, 100% of the products used in construction meet the VOC and formaldehyde thresholds (Label A + on all materials). The building has several aspects to promote indoor air quality: - Air Master DESSO carpet: a floor that improves indoor air quality - BIOORG maintenance: probiotics

naturally clean interior spaces, Active Lifl system: it eliminates replaceable magnetic waves, but also reduces the linear wiring often made of PVC - Green System: the leasing of plants for offices contributes to Both to develop the economics of functionality but also the indoor air quality as well as the visual comfort and well-being recognized that green plants bring.

Comfort

Health & comfort : The new building has been designed for future users, taking into account the need for well-being in the professional space. As a result, numerous arrangements have been made: - meeting rooms at all levels: they represent 8% of the office space, located in the immediate vicinity of vertical traffic, allowing for a modularity of these spaces. The availability of meeting rooms allows flexibility of the open space, for users who can thus isolate themselves easily according to the needs; - spaces for relaxation at all levels: according to the future occupants of all levels, these areas of the tea room, these spaces will have expectations in water and electricity supply. In order to improve the comfort of users in the Ampère e+ building, several measures have been taken: - Natural light is a fundamental principle that influences the well-being of the occupants. As a result, all the premises have access to natural light. This is possible due to the completion of a study on the luminosity and a work on the structure to bring natural light to the garden level through a patio type courtyard. In addition, glass windows located in the upper floor of the entrance hall of the building allow the natural light to be diffused into this reception area. The types of facades differ according to the external context. The building has four typologies of facades, according to the orientations and the different urban contexts. These facades also meet three criteria: water and air tightness, strength and durability over time, and ease of access and maintenance. In order to eliminate the thermal bridges, the facades are defined as follows: a framework frame made of profiles and half profiles made of extruded aluminum allowing the fixing of different types of filler elements, glazed or not (fixed panes, smoke extraction windows, Fire extinguishers, opaque elements, sandow-box type in sill, or aluminum sheet in transom). The four façades respond to the interior context through the external context: - orientations and luminosities - work spaces and shared spaces The aesthetic aspect is also present in order to contribute to the comfort of users and to create an architectural fluidity. In order to think about the well-being of the users and its adaptability, several specificities are installed within the Ampère e+ building: solar protection is installed on the windows. Initially, the building includes fixed sun screens in vertical screen-printed glass slats that are arranged perpendicular to the façade. They will protect the users from direct light. In addition, motorized Venetian interior blinds are installed in order to control the luminous environment of the workspaces.

Calculated thermal comfort : Calcul par simulation thermique dynamique

Measured thermal comfort : Mesure de l'ensemble des températures sur les reprises d'air

Acoustic comfort : Acoustic comfort equivalent to the High Performance level of NF S 31080

Carbon

GHG emissions

GHG in use : 3,34 $KgCO_2/m^2/an$

Methodology used :

Results from existing RT consumptions

Building lifetime : 100,00 année(s)

GHG Cradle to Grave : 464,00 $KgCO_2/m^2$

Calculated by E-licco

Life Cycle Analysis

Material impact on GHG emissions :

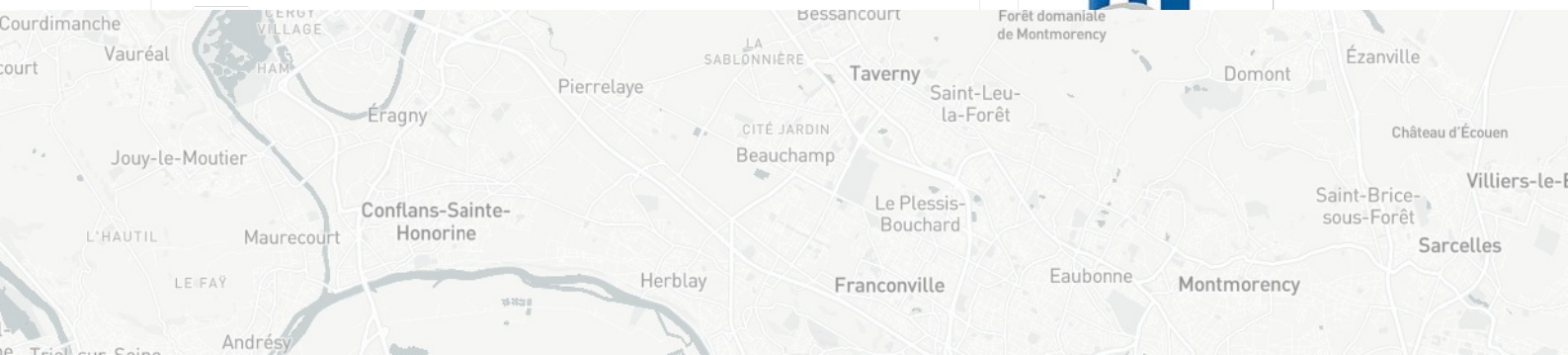
17

Material impact on energy consumption : 134,00 kWhEP

Eco-design material : On the basis of a circular economy approach, placing the user at the heart of its design, Ampère e + is an example in terms of energy, environment and well-being performance throughout the life cycle of the building. Indeed, the materials used and a C2C (Cradle to Cradle) label demonstrates the implication of Ampère e + in a circular economy approach.

Contest

Building candidate in the category



Coup de Cœur des Internautes

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