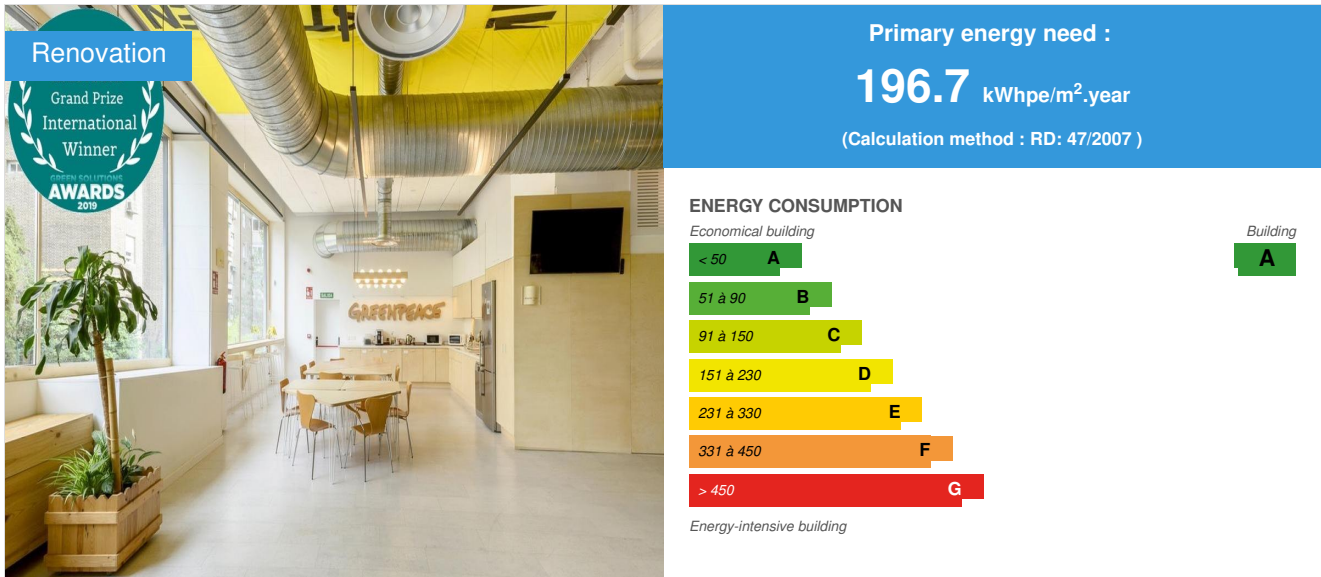


Greenpeace Spain Headquarters

by Paloma Suárez Pardo / 2019-05-15 17:09:57 / España / 17238 / ES



Building Type : Office building < 28m
Construction Year : 2019
Delivery year : 2019
Address 1 - street : CALLE VALORES 1 28007 MADRID, España
Climate zone : [Csa] Interior Mediterranean - Mild with dry, hot summer.

Net Floor Area : 943 m² Superficie útil
Construction/refurbishment cost : 542 710 €
Number of Work station : 90 Work station
Cost/m2 : 575.51 €/m²

General information

Greenpeace Spain Headquarters won the Sustainable Renovation Grand Prize of the 2019 Green Solutions Awards at the Spain level + the international Sustainable Renovation Grand Prize.

The project consists in the rehabilitation of a 1000 m² office space to be the new headquarters of Greenpeace Spain. One of the fundamental values of Greenpeace is the action and the project seeks to represent it through a **sustainable architecture**, which takes care of people and the planet.

We represent the action through the banner and other elements that reflect the soul of the organization. We recycle these elements to create luminaires, curtains or the ceiling itself. The distribution of the space has been based fundamentally on the maximum use of the areas with natural lighting to house the work area and the division of the space in **public zone/ action zone** and **private** / production area.

Very demanding ecological measures have been taken such as the isolation of the entire interior envelope to improve its **energy efficiency**, guaranteeing a minimum energy expenditure. Low impact **ecological materials** have been used taking its LIFE CYCLE ANALYSIS into consideration: recycled, recyclable and organic (recycled cotton insulation, wood fibre, natural cork, plant-based paints, ecological varnishes and wood with FSC sustainable management certification, etc.).

For cooling, an **evaporative system** has been designed avoiding the classic air conditioning systems that use chlorofluorinated gases with a high degree of

impact on climate change. This system has an energy expenditure 80% lower than a conventional system and generates better air quality when filtered. The ventilation is **mechanically controlled double flow with heat recovery**. Controlled mechanical ventilation is the most effective way to combat the accumulation of biological, chemical and radioactive contaminants, and the double flow with heat recovery avoids the energy losses of traditional systems.

The **lighting** is led at all points of light and with a chromatic reproduction of 90% guaranteeing the best lighting quality with the lowest energy expenditure. A planter design has been used to introduce **vegetation** on the roof in order to generate a feeling of approach to nature and achieve an improvement in the visual and acoustic comfort of the space. We use a ceramic filter to obtain **water** free of odours, pathogens and other substances and thus obtain a good quality of water for consumption. The quality of the light, the materials used, and the systems of installations have been chosen taking into account the HEALTH and COMFORT of the people.

Finally, the **ACV ECOMETER** tool has been used to calculate the life cycle analysis of the project and we have obtained a carbon footprint impact of 124 tons of CO2 throughout the construction process, which means a very low impact (124 kg / m2), due to the low environmental cost of the chosen materials and the austerity and simplicity of the space. The 124 tn of the work has been compensated by sAtt with a compensation program in Nicaragua. As the building operates with 100% renewable energy and has no combustion element, we can affirm that it is a **zero CO2** project, since it has offset its environmental cost in terms of carbon and in its use it will not emit any gram of CO2. With this, Greenpeace ensures that their office participates in an idea of decarbonising the buildings being their own headquarters consistent with their values.

See more details about this project

[Certificación CO2 nulo. Ecómetro](#)

<http://acv.ecometro.org/>

Data reliability

Self-declared

Photo credit

Andrés Valentín-Gamazo

Stakeholders

Contractor

Name : sAtt Triple Balance

Contact : Iñaki Alonso Echeverría / Paloma Domínguez Liñán. Tel 914094633

<http://satt.es/>

Construction Manager

Name : sAtt Triple Balance

Contact : Iñaki Alonso Echeverría / Paloma Domínguez Liñán. Tel 914094633

<http://satt.es/>

Stakeholders

Function : Designer

sAtt Triple Balance

Iñaki Alonso Echeverría / Paloma Domínguez Liñán. Calle Ferraz 56, 28008 Madrid. Tel 914094633

<http://satt.es/>

Project Author Basic project and execution. Construction management. Work execution

Function : Developer

GREENPEACE ESPAÑA

Julián Carranza. info.es@greenpeace.org, Calle Valores 1, 28007 Madrid

<https://es.greenpeace.org/es/>

Project Promoter

Function : Thermal consultancy agency

Alter Technica Ingenieros

Jesús Soto. Tel 921462526

<http://www.altertech.es/>

Energy consulting and design of air conditioning and ventilation installations

Function : Construction company

3B Ingeniería y Consultoría

Benjamín Cereceda. Tel 657583249

<http://www.3bic.es/>

Facilities consulting and design

Function : Others

María Gil de Montes

María Gil de Montes, Lighting designer. Tel 678047676

<http://mariagildemontes.com/>

Illumination design

Function : Environmental consultancy

Fundación para la Salud Geoambiental

Fernando Pérez

<https://www.saludgeoambiental.org/>

Geoenvironmental study

Contracting method

Lump-sum turnkey

Owner approach of sustainability

Mission and vision

Greenpeace is an independent organization, politically and economically, that uses nonviolent direct action to attract public attention to global environmental problems and promote the necessary solutions for a **sustainable and peaceful future**.

The fight against climate change and energy policy are one of the main objectives for which the organization works. Greenpeace calls for ambitious commitments in the **fight against climate change**: emission reduction, energy-saving measures and support to renewable energy.

In this context, Greenpeace works and researches for the development of **sustainable cities**. The cities, play a fundamental role in the fight against climate change and are also considered the cathedrals of consumption, but also the places where the change towards a more sustainable planet will take shape. The city is an insatiable consumer, but the scarcity of natural resources will be its fundamental limiter. To change this situation, we have to change our way of life, including consumption, mobility and **construction**.

Greenpeace works to achieve the progressive elimination of organochlorines, used in the manufacture of **PVC** plastic. The production of these compounds releases persistent, bioaccumulative and toxic substances for the environment and health. Therefore, the use of PVC-free materials in the project has been a premise.

Another of the starting premises is to propose an air conditioning system that is most respectful with the environment, free of any chlorofluorinated refrigerant. A solution based on indirect evaporative equipment (with the support of direct equipment) is proposed, which uses water evaporation to reduce the air temperature, without increasing the absolute humidity. The thermal efficiency of the evaporative systems is extraordinary since its electrical consumption is that corresponding to the fans of the equipment. It is estimated that the air conditioning of 1,000 m² will require an installed electrical power of less than 10 kW.

Architectural description

An architecture has been developed that represents the client's values, respectful of the environment and the health of the people who are supported by these measures:

- Energy efficiency and bioclimatic design
- Renewable energy
- Recycling
- Ecological materials
- Geoenvironmental health
- Vegetation
- Carbon footprint - CO₂ null

Energy consumption

Primary energy need : 196,70 kWhpe/m².year

Primary energy need for standard building : 1,00 kWhpe/m².year

Calculation method : RD: 47/2007

CEEB : -0.0004

Breakdown for energy consumption :

Heating = 95.97 kWh / m² year

Cooling = 4.18 kWh / m² year

ACS = 3.19 kWh / m² year

Lighting = 93.36 kWh / m² year

More information :

For the design of the air conditioning system, the context of climate change has been taken into account, estimating the rise in temperatures over the next 20 years. Therefore, the efficiency of cooling systems has been prioritized over heat production. For the heating, the Joule effect is used, by means of electrical resistors coupled to the ventilation ducts. Despite not being an efficient system in itself (COP = 1), the Passive Building + Joule Effect assembly is, providing a lower electrical consumption for heating than the existing installations based on a heat pump.

Initial consumption : 1,00 kWhpe/m².year

Envelope performance

Envelope U-Value : 0,75 W.m⁻².K⁻¹

Building Compactness Coefficient : 0,54

Renewables & systems

Systems

Heating system :

- Others
- Others

Hot water system :

- Individual electric boiler

Cooling system :

- Others
- Others

Ventilation system :

- Double flow

Renewable systems :

- Micro wind

Other information on HVAC :

For the design of the air conditioning system, the context of climate change has been taken into account, estimating the rise in temperatures over the next 20 years. Therefore, the efficiency of cold systems has been prioritized over heat production.

One of the starting premises is to propose a refrigeration system that is most respectful of the environment, free of any chlorofluorinated refrigerant. A solution based on indirect evaporative equipment (with the support of a direct team) is proposed, which uses water evaporation to reduce the air temperature, without increasing the absolute humidity. The thermal efficiency of evaporative systems is very good (savings of 80% compared to a conventional climate) since its electrical consumption corresponds only to the fans of the equipment. It is estimated that the air conditioning of 1,000 m² will require an installed electrical power of less than 10 kW.

For the heat, the Joule effect is used, by means of electrical resistors coupled to the ventilation ducts. Despite not being in itself an efficient system (COP = 1), the Passive Building + Joule Effect assembly is, providing a lower electrical consumption for heating than the existing installations based on a heat pump. The heat needs are minimized by taking into account the insulation, heat of equipment and people together with the heat recovered.

The ventilation is mechanically controlled double flow with heat recovery. Controlled mechanical ventilation is the most effective way to combat the accumulation of biological, chemical and radioactive contaminants, and the double flow with heat recovery avoids the energy losses of traditional systems. Emission through duct networks that will use a heat recovery ventilation center, sized for the projected occupation.

These systems improve air quality and therefore the HEALTH and COMFORT of people.

Solutions enhancing nature free gains :

- Passive strategies: envelope insulation and sun protection. - Internal loads: people, equipment - Heat recovery through ventilation

GHG emissions

GHG in use : 9,00 KgCO₂/m²/year

Methodology used :

The Life Cycle Analysis methodology of the ECV ECOMETER tool has been used. The use phase does not generate impact since the energy is taken from the electric mill owned by the promoter.

GHG before use : 124,00 KgCO₂ /m²

Building lifetime : 30,00 year(s)

GHG in use years : 13.78

GHG Cradle to Grave : 131,00 KgCO₂ /m²

Life Cycle Analysis

The Project Life Cycle Analysis diagram is attached along with the study of GHG emissions of materials and primary energy.

Material impact on GHG emissions :

111

Material impact on energy consumption : 430 556,00 kWhEP

Eco-design material :

- **Recycled cotton fibre** insulation for walls. Geopanel Insuffed **cellulose** insulation for walls. Thermopal **Wood fibre** insulation in floors. Ecospai / Pavatex. **Natural cork** flooring. Wicanders. **FSC** certified birch **wood furniture**. **Ecological wood oil**. Naturtrend Zweihorn **Recycled and recyclable polypropylene** chairs. Wing Actiu chair. For the acoustic conditioning solution, the partitions were isolated with recycled cotton fibre as well as the existing ceiling was repaired with acoustic insulating panels made of wood fibre bonded with magnesite. The sound bridges were treated with recycled cotton panels. - During the design process, the ECOMETRO ACV tool was used to analyze the carbon footprint of different construction solutions, choosing the least impactful. We present in the attached pdf the **comparative (GEI-tN CO2)** for the 4 most representative work units of the term ECO-DESIGNED materials. NOTE: The impact of GHG emissions is from phases A1-A3 (MANUFACTURE OF MATERIALS IS 111 tN of CO2 eq)

Water management

We use a ceramic filter to obtain a water free of odors, pathogens and other substances and thus obtain a good quality of water for consumption. Aerators are installed in taps for the reduction of flow to 0.6 lts / sg.

Indoor Air quality

DOUBLE-FLOW CONTROLLED MECHANICAL VENTILATION

The double-flow controlled mechanical ventilation system (with heat recovery) has filtration units that clean the air of particles, guaranteeing the quality of the indoor air.

The ventilation equipment with heat recovery supplies the room with fresh filtered fresh air with a sufficient flow rate and proportionally adjustable. At the same time, they aspirate an equivalent volume of stale air, loaded with CO₂, and eliminate it as evacuated air. This also effectively eliminates other harmful substances, such as odours, fine powders, moisture, etc. Heat recovery takes place by means of a corrosion-resistant rotary heat recuperator with heat recovery factors of up to 90% and moisture recovery factors of up to 90%. In this way, the primary energy costs of the heating installation are considerably reduced. The FSP (fan specific performance) value also reflects the high degree of energy efficiency. Ventilation equipment model with heat recovery: Wolf CRL 4800 iH. RWT rotary recuperator.

Comfort

Health & comfort :

GEO-ENVIRONMENTAL HEALTH ANALYSIS

A study has been conducted aimed at identifying the different risk factors present in the premises, factors of geophysical, physical, chemical and biological origin. Geoenvironmental analysis is a tool for disease prevention. After the analysis, the corrective measures are indicated for the values that are above what is considered acceptable according to the norm FSG 2015 V.1.

The main environmental exposure factors are:

- o Low-frequency alternate electric fields.
- o Low-frequency alternate magnetic fields.
- o Harmonics in the installation
- o High-frequency artificial electromagnetic radiation.

- Continuous or electrostatic electric fields
- Continuous magnetic or magnetostatic fields
- Environmental radioactivity, especially radon gas.
- The geophysical activity of the terrain: magnetic field and terrestrial radiation.
- Artificial lighting.
- Aldehyde levels and especially formaldehyde.
- VOC levels (Volatile Organic Compounds).
- The levels of particulate matter.
- Nitrogen dioxide gas levels
- Sulfur dioxide levels.
- The levels of carbon dioxide.
- Ozone levels

For electromagnetic contamination, ground connections have been put in place. They protect in case of discharge and contribute to reducing the electric fields generated by the different devices we connect to the network. Due to an electric field value above the reference in the workplaces, a blocking measure is implemented by means of aluminium wiring trays or other conductive metal under the tables, with grounding.

Measured indoor CO2 concentration :
784 ppm

Products

Product

Natural cork floor

Wicanders

<https://es.wicanders.com/es/>

<https://es.wicanders.com/es/>

Product category : Acabados / Suelo

We replace the existing PVC flooring with another one with good environmental performance. A floating cork floor is chosen in two different touches. Cork is a completely natural material, with a transformation process with very low impact and close origin (Portugal).

All the materials used have been chosen with the objective that the impact derived from their life cycle analysis is as small as possible. Recycled, recyclable, and renewable materials predominate taking into account the traceability and proximity to the project so that the carbon footprint derived from its transportation to the worksite is as low as possible. The measurement and calculation of the carbon footprint have been made using the ECOMETER ACV tool.



Recycled cotton fiber insulation

Geopannel

<http://www.geopannel.com>

Product category : Acabados / Acabado, aislamiento

Insulation based on regenerated textile waste, which constitutes up to 85% of the product's composition. Not only do they not only consume resources but they contribute to eliminating waste from other industrial processes to incorporate them into the architecture, promoting the circular economy. It has a low CARBON FOOTPRINT, contributing to minimize global warming and reduce waste from the textile industry. NO TOXICITY throughout its useful life and not irritating. Origin: Logroño (Spain)



Wood fiber insulation

Ecospai/Pavatex

<https://ecospai.com/>

Product category : Acabados / Acabado, aislamiento

Fiber insulation of compacted wood. It is a biodegradable, reusable and harmless material and does not emit toxic gases. Due to the low energy required for its manufacture, and the energy it will save during its useful life, it can be considered a great ecological product that is healthy and beneficial for health. It is installed on the technical floor and works as a base for the finishing floor.

Origin: Barcelona (Spain)

<https://ecospai.com/aislamiento/pavatherm/>



Plant-based paint

Auro

<http://auropinturas.es/>

Product category : Acabados / Pinturas, murales, revestimientos de paredes

Plant-based paint is an aqueous product with low emission and without solvents, obtained naturally from organic and mineral products. It is a 100% natural product that has no petroleum-derived compound. It is applied to walls and ceilings and the boats are recycled as plant pots. Origin: Barcelona (Spain) / Germany



Costs

Construction and exploitation costs

Total cost of the building : 542 710 €

Urban environment

The office is located in C / Valores n°1 (Madrid) with main access through Pasaje Dorado 6. It is located in a residential area belonging to the Retiro district, next to the C / Doctor Esquerdo and the Parque de Roma. The place has an outdoor garden/terrace.

The place has an outdoor and indoor bike parking that promote **sustainable mobility** alternatives, both for the organization and for the neighbourhood.

Land plot area

Land plot area : 1 304,00 m²

Built-up area

Built-up area : 1 004,00 %

Green space

Green space : 300,00

Building Environmental Quality

Building Environmental Quality

- Building flexibility
- indoor air quality and health
- biodiversity
- comfort (visual, olfactive, thermal)
- energy efficiency
- products and materials

Contest

Reasons for participating in the competition(s)

100% RENEWABLE ENERGY

The office uses 100% renewable energy of own origin through a windmill installed in Catalonia. In this way, we achieve the decarbonization of the premises in its usage phase and promote the shift of the energy model.

NULL CO2

We have calculated the carbon footprint of the process of execution, manufacture of the materials and transport to work with the tool ECOMETER ACV, with a result of 124 tons of CO2. During its use, these headquarters do not emit CO2 since it is 100% electrified and with 100% renewable energy. sAtt has offset the Carbon Footprint (124Tn) in construction with an ECODES reforestation program in Nicaragua.

ENERGY EFFICIENCY AND PASSIVE MEASURES

The energy strategy is to minimize demand through passive measures. For this purpose, the enclosure (walls, floors and ceilings) has been isolated, high-performance glass and solar control elements have been installed. In this way we manage to save energy and reduce the impact.

FLUORATED GAS FREE COOLING SYSTEM

To maintain a good temperature in the office we use a direct and indirect evaporative system that does not use fluorinated gases, generates better air quality and saves 80% compared to a conventional heat pump system.

ECOLOGICAL MATERIALS

Low impact materials in its Life Cycle Analysis: recycled, recyclable, and renewable. Cork for floors, wood chips and recycled textiles for insulation, FSC wood for furniture, vegetable paints. We avoid materials with formaldehyde and, of course, no PVC.

SPACE HEALTH AND GEO-ENVIRONMENTAL ANALYSIS

The health of people depends on a series of perfectly measurable geophysical alterations. We analyze waves, particles, gases, electric fields, light, shapes, colours and vegetation to propose measures and generate the best relationship between people and space.

NATURAL LIGHT AND LED LIGHTING

We have prioritized the entry of natural light into space through the layout of the rooms in the north, the colour of the space and the orientation. The work light has a colour rendering index of 90% for better visual comfort.

VEGETATION

Plants clean the air and generate healthier and more productive spaces, in addition to building a connection with nature that produces well-being.

ACCESSIBLE DESIGN

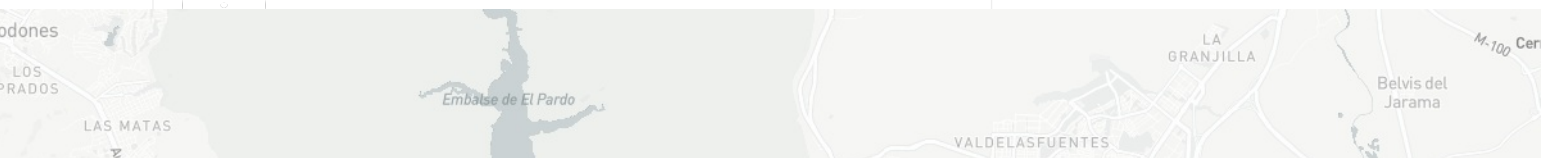
The office is designed to be accessible to people with functional diversity. It has tours, furniture and adapted toilets.

Building candidate in the category



Energía & Climas Cálidos

Bajo Carbono

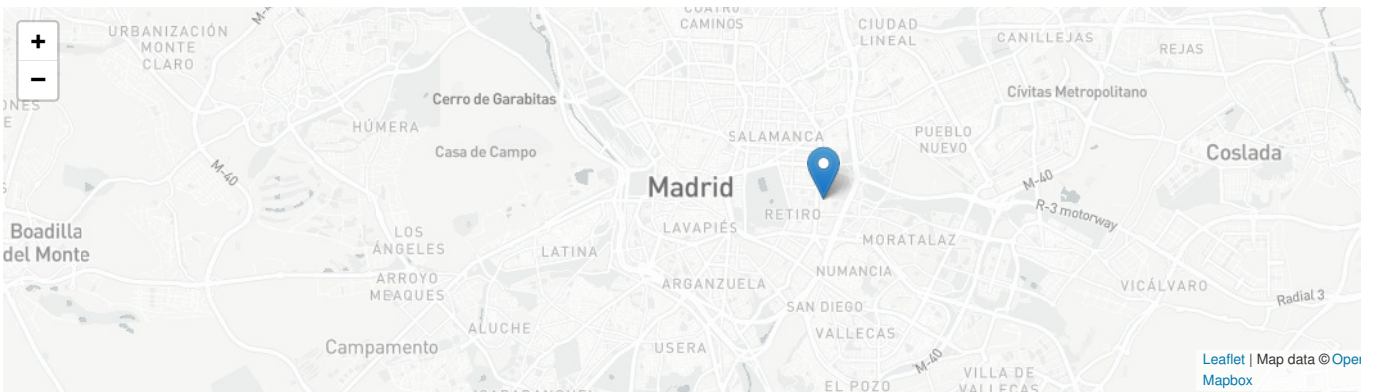




Salud & Comodidad



Premio de los Usuarios



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