Triple Space

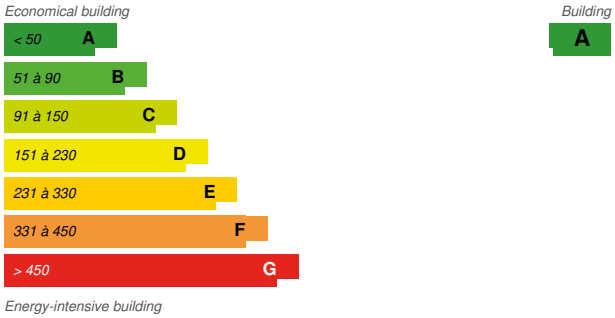
by Paloma Suárez Pardo / 2021-03-22 10:34:04 / España / 5636 / ES

Primary energy need :

78.8 kWhpe/m^2.year

(Calculation method : RD: 47/2007)

ENERGY CONSUMPTION



Building Type : Office building < 28m
Construction Year : 2019
Delivery year : 2020
Address 1 - street : Calle Ferraz 56, bajo dcha. 28008 MADRID, España
Climate zone : [Csa] Interior Mediterranean - Mild with dry, hot summer.

Net Floor Area : 422 m^2 Superficie útil
Construction/refurbishment cost : 522 480 €
Cost/m2 : 1238.1 €/m^2

General informations

This building was awarded the Sustainable Renovation Grand Prize of the Green Solutions Awards 2020-21 at the national level; and a mention for the same category at the international level.

Triple is a coworking and events space located in the heart of Madrid that represents the concept of Triple Balance. Inside of it, organizations and activities whose vocation is **to generate a positive environmental, social, as well as economic impact** converge.

It was born from the rehabilitation of an old industrial building located in a courtyard. It has 538 m² distributed over three floors and the geometry of the building gives it a special character: its sloping roof-facade provides a powerful source of natural light that is distributed throughout the interior.

A series of ecological principles and design tools are applied to achieve the least possible impact on the environment where it is located and make Triple a healthy space. A space that respects the environment, offers maximum comfort and well-being to its users, and improves their productivity.

All this together with the use of ecological and proximity materials, the use of available resources to save energy, and an air monitoring system that maintains good air quality in the space, which is especially important in the context of COVID-19.

It is the first coworking building that received **zero CO2 certification** from the Spanish association Ecómetro.

The use of Ecómetro's LCA tool during the design and construction phase allowed us to make data-driven decisions to reduce the environmental impact from the beginning of the project. The emissions emitted have been offset through a reforestation program. The building is 100% electrified and the utility company provides renewable energies.

Data reliability

3rd part certified

Photo credit

Living Eye

Stakeholders

Contractor

Name : Anomalia Business Design
Contact : Raquel Traba Galisteo, raquel[a]tripleferraz.com, Calle Ferraz 56, 28008 Madrid.
https://tripleferraz.com/

Construction Manager

Name : sAtt Triple Balance
Contact : Iñaki Alonso Echeverría/Paloma Domínguez Liñán, Calle Ferraz 56, 28008 Madrid. Tel 914094633
http://satt.es/

Stakeholders

Function : Thermal consultancy agency

Alter Technica Ingenieros

Jesús Soto, jesus.soto[a]altertech.es

http://www.altertech.es/
Energy consulting and design of HVAC and Ventilation facilities

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Function : Others

María Gil de Montes

María Gil de Montes-Lighting designer, gildemontes[a]satt.es

http://mariagildemontes.com/
Illumination design

Function : Construction Manager

sAtt Triple Balance

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

http://satt.es/
Work execution

Function : Environmental consultancy

Fundación para la Salud Geoambiental

Fernando Pérez, fernando.perez[a]saludgeoambiental.org

https://www.saludgeoambiental.org/
Geoenvironmental study

Contracting method

Other methods

Owner approach of sustainability

Triple was born with the aim of bringing together triple balance companies, companies with a positive impact or in transition, under the same roof. The space also reflects these principles, which is why it is a healthy space that takes care of people and the environment.

Triple is the first space, but more are planned.

Architectural description

An architecture that respects the environment and people's health has been developed based on these measures:

- Building CO2 null
- Air quality and technology
- Energy efficiency and passive measures
- Healthy and proximity materials
- Vegetation
- Geoenvironmental analysis

Energy

Energy consumption

Primary energy need : 78,80 kWhpe/m^2.year

Primary energy need for standard building : 161,88 kWhpe/m^2.year

Calculation method : RD: 47/2007

CEEB : 0.0002

Final Energy : 37,60 kWhfe/m^2.year

Breakdown for energy consumption :
Heating = 14.7 kWh / m2 year Cooling = 5.7 kWh / m2 year DHW = 2.4 kWh / m2 year Lighting = 14.6 kWh / m2 year

Initial consumption : 1,00 kWhpe/m^2.year

Envelope performance

Envelope U-Value : 0,30 $W.m^{-2}.K^{-1}$

More information :
U enclosure: 0.30 W / m²KU covered: 0.25 W / m²K

Renewables & systems

Systems

Heating system :
- Heat pump
- Fan coil

Hot water system :
- Individual electric boiler

Cooling system :
- Others
- Fan coil

Ventilation system :
- Double flow heat exchanger

Renewable systems :
- Heat pump

Other information on HVAC :
The air conditioning (cooling and heating) is carried out through an air-to-air heat pump system. The system is zoned and has both cassette and wall-mounted indoor units. All these units are associated with outdoor units located on the roof.

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

These systems improve air quality and therefore people's HEALTH and COMFORT.

Solutions enhancing nature free gains :
- Passive strategies: insulation of the envelope and solar protection. - Internal loads: people, equipment - Heat recovery through ventilation

Environment

GHG emissions

GHG in use : 2,00 $KgCO_2/m^2$/year

Methodology used :

The Life Cycle Analysis methodology of the LCA ECOMETER tool has been used.

GHG before use : 303,00 $KgCO_2$ /m^2

Building lifetime : 30,00 year(s)

, ie xx in use years : 151.5

GHG Cradle to Grave : 363,00 $KgCO_2$ /m^2

The emissions from the construction phases are offset by a carbon footprint offset program. The use phase does not generate impact since the energy comes from renewable sources.

Water management

We use a ceramic filter to obtain water free of odors, pathogens and other substances and thus obtain a good quality of drinking water. Aerators are installed in taps to reduce the flow to 0.6 l / s.

Indoor Air quality

DOUBLE FLOW CONTROLLED MECHANICAL VENTILATION

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

Ventilation equipment with heat recovery supplies fresh filtered outdoor air with a sufficient and proportionally adjustable flow to the premises. At the same time, they suck in an equivalent volume of stale air, laden with CO2, and remove it as evacuated air, reducing at the same time the possibility of suspended particles containing viruses and bacteria. This also effectively removes other harmful substances, such as odors, fine dust, moisture, etc. Heat recovery takes place by means of a corrosion resistant rotary heat recovery unit with heat recovery factors of up to 90% and moisture recovery factors of up to 90%. This considerably reduces the primary energy costs of the heating installation. The SFP (Specific Fan Performance) value also reflects the high degree of energy efficiency.

Comfort

Health & comfort :

GEOENVIRONMENTAL HEALTH ANALYSIS

A study has been carried out aimed at the identification of the different risk factors present in the place, 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 NORMA FSG 2015 V.1 regulation.

The main environmental exposure factors are:

- Low frequency alternating electric fields.
- Low frequency alternating magnetic fields.
- Harmonics in the installation
- High frequency artificial electromagnetic radiation.
- Electrostatic or continuous electric fields
- Continuous magnetic fields or magnetostatic
- Environmental radioactivity and especially radon gas.
- The geophysical activity of the terrain: magnetic field and terrestrial radiation.
- Artificial lighting.
- The levels of aldehydes and especially formaldehyde.
- The levels of VOCs.
- The levels of particulate matter.
- Nitrogen dioxide gas levels
- Sulfur dioxide levels.
- Carbon dioxide levels.
- Ozone levels.

Calculated indoor CO2 concentration :

Controlamos la concentración de CO2 interior a través de un sistema de monitorización continuo, con un medidor en cada planta del edificio. Permite el control en tiempo real, así como conocer un histórico diario de distintos compuestos y sustancias (CO2,

Measured indoor CO2 concentration :

490

Calculated thermal comfort : InBiot system

Products

Product

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 composition of the product. Not only do they not consume hardly any resources, but they also contribute to eliminating waste from other industrial processes to incorporate them into architecture, promoting the circular economy.It has a low CARBON FOOTPRINT, helping to minimize global warming and reduce waste from the textile industry. WITHOUT TOXICITY throughout its useful life and non-irritating. Origin: Logroño (Spain).

Vegetable paint

Auro

http://auropinturas.es/

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

Vegetable paint is a low-emission, solvent-free aqueous emission naturally derived from organic and mineral products. It is a 100% natural product that does not present any compound derived from petroleum. The paint cans have been recycled as flower pots for the plants. Origin: Barcelona (Spain) / Germany http://auropinturas.es/productos/paredes-y-techos/pintura-natural-paredes-y-techos-no-321 /

Clay tile

Rústicos Toledo

https://www.rusticostoledo.com/es/

Product category : Acabados / Suelo

Natural clay tile.

FSC certified wood

Product category : Acabados / Carpintería exterior - Puertas y Ventanas

Furniture and carpentry made with FSC certified wood. Birch and oak wood treated with organic oil (Naturtrend Zweihorn). Origin: Madrid (Spain) / Romania.

Costs

Construction and exploitation costs

Total cost of the building : 580 160 €

Urban environment

The building is located in a central area of Madrid. Access is made directly from the street on the ground floor. It has all the necessary services and the Parque del Oeste at 5 minutes on foot.

The reform of the envelope has taken into account the integration into the interior of the block patio where it is located. For this reason, aesthetic solutions have

been chosen from this perspective.

The place has a bike parking space that promotes **sustainable mobility** alternatives, both for the organization and for the neighborhood.

Land plot area

Land plot area : 250,00 m^2

Built-up area

Built-up area : 535,00 %

Building Environnemental Quality

Building Environmental Quality

- indoor air quality and health
- works (including waste management)
- comfort (visual, olfactive, thermal)
- energy efficiency
- renewable energies
- products and materials

Contest

Reasons for participating in the competition(s)

Zero CO2

Using the LCA ECOMETER tool, a Life Cycle Analysis was developed to calculate, among other things, the carbon footprint of the project. The result was 196 tons of CO2 (364 kg/m2), which has been offset through a reforestation program. The CO2 offset, together with the complete electrification of the building and the use of 100% renewable energies, make TRIPLE a zero CO2 space.

Air quality and systems

The ventilation is double-flow controlled mechanical ventilation with heat recovery (VMC), which saves 40% compared to a conventional system. This way there is a continuous renewal with outside air filtered through filters that remove up to 80% of pollutant particles (including viruses and bacteria) and allow good indoor air quality. We control air quality through a continuous monitoring system that measures air parameters. It allows real-time control, as well as a daily history of different compounds and substances (CO2, VOCs, suspended particles, humidity, ozone, formaldehyde...)...

Energy efficiency and passive measures

The energy strategy is to reduce demand as much as possible through passive measures. To this end, the building envelope has been insulated, high-performance glass has been installed and solar control elements have been installed. In this way we manage to save energy and reduce the impact.

Healthy and proximity materials

Use of healthy and proximity materials: clay on the floor, FSC certified wood in the carpentry, vegetable paint on the walls, recycled textile insulation for the interior of the envelope.

Vegetation

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

Geoenvironmental analysis to create a healthy space

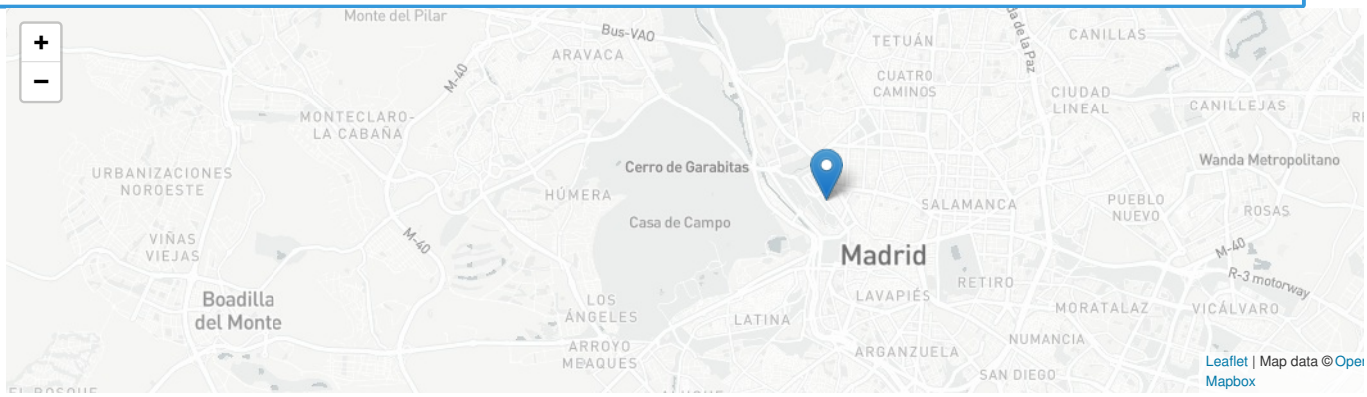
People's health depends on a series of perfectly measurable geophysical disturbances. We analyze waves, particles, gases, electric fields, light, shapes, colors and vegetation to propose measures and generate the best relationship between people and space.

Building candidate in the category

Low Carbon

Health & Comfort

PDF



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