Orona IDeO – innovation city

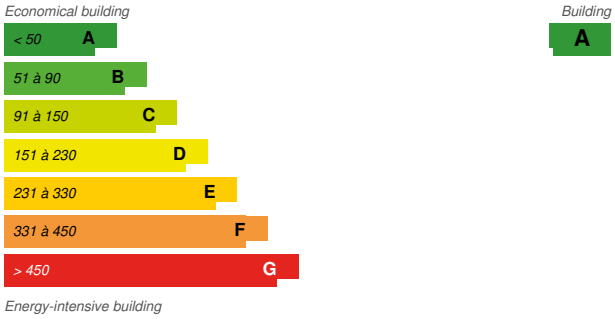
by Xabier Barrutieta Basurko / 2013-04-09 09:38:40 / Espagne / 22104 / ES

Primary energy need :

84 kWhpe/m^2.year

(Calculation method :)

ENERGY CONSUMPTION



Building Type : Office building < 28m
Construction Year : 2013
Delivery year :
Address 1 - street : Galarreta 20120 HERNANI, España
Climate zone : [Csb] Coastal Mediterranean - Mild with cool, dry summer.

Net Floor Area : 29 000 m^2 Autre type de surface nette
Construction/refurbishment cost : 41 600 000 €
Number of Work station : 1 150 Work station
Cost/m2 : 1434.48 €/m^2

Certifications :

General information

Orona IDeO – innovation city is the flagship design of the new extension of San Sebastian's Technology Park that frames in a public-private collaboration between Orona (company that focuses its activity on lifts, escalators and moving walkways) and the Technology Park.

The purpose of this project is to house Orona's Innovation Ecosystem, which stands out as it brings together different synergetic activities –business, technology centres and university- and it will be a laboratory where leading-edge technologies in sustainability and energy management in buildings will be applied.

The Orona Zero building will house Orona corporate headquarters and Orona eic (Elevator innovation Centre). The Orona Foundation is a hybrid building that houses the university. The A3 research building has laboratories devoted to research on advanced electricity storage systems. Orona Gallery will be used as a pavilion for visitors and real-time energy monitoring. The buildings will be interconnected by a central plaza enhancing the project's urban nature.

The design includes a district heating-cooling system that will be managed by an ESCO (Energy Service Company), and will supply each of the building with

energy from 100% renewable energy sources, which is further backed up by certification to Leed Gold and Breeam Excellent building standards.

See more details about this project

http://www.orona-ideo.com/
http://www.breeam.es/comunicacion/249
http://www.xabierbarrutieta.com/

Data reliability

Assessor

Stakeholders

Stakeholders

Function : Designer

Xabier Barrutieta, Eneko Goikoetxea, Javier de la Fuente, Santiago Perez

xbarrutieta@orona-group.com

http://www.orona-ideo.com; http://arkigekko.blogspot.com.es/; http://www.xabierbarrutieta.com/

Contracting method

Separate batches

Owner approach of sustainability

A design for innovation must be innovative in itself. Orona IDeO is overtaking the future with the bioclimatic design of the buildings and urban spaces, a district heating cooling system using 100% renewable energy sources and a perfectly integrated photovoltaic roof aimed at own consumption, and research on electricity storage linked to elevator systems.

Architectural description

This Project has been designed in an integrated way like an Smart District. One important asset is that it is based on the concept of Urban Cell, which is a scale between architecture and urbanism. The approach of the project on this scale comprehensively tackle a number of key design issues related to urban space, green space, accessibility, orientation of buildings, a mix of uses and energy efficiency, among others. Thus this design was conceived and developed taking into account a series of linked buildings and urban spaces that synergistically create Orona IDeO.

Energy

Energy consumption

Primary energy need : 84,00 kWhpe/m^2.year

Primary energy need for standard building : 152,00 kWhpe/m^2.year

Calculation method :

Final Energy : 49,00 kWhfe/m^2.year

Breakdown for energy consumption :
78% heating

22% cooling

Envelope performance

Envelope U-Value : 1,10 $W.m^{-2}.K^{-1}$

More information :
Apart from having low thermal transmittance (U), the walls of the buildings are designed to adapt to different circumstances. The cylinder façade is made up of a curtain wall with a skin composed of triangular pixels which change from: opaque, translucent and transparent, depending on their position and the different circumstances regarding exposition to solar radiation, access to views, the relation with the use of internal space, etc.
With the aid of the superposition of these variations on the façade development, and taking into account the overall transmittance and a reference threshold for heat loss, the solutions for the outer and inner façades are designed, each with a different ratio of openings and opaque areas.

Renewables & systems

Systems

Heating system :

- Geothermal heat pump
- Low temperature floor heating
- VAV System
- Wood boiler
- Solar thermal

Hot water system :

- Individual electric boiler
- Solar Thermal

Cooling system :

- Urban network
- Geothermal heat pump
- Fan coil
- Floor cooling

Ventilation system :

- Natural ventilation
- Free-cooling

https://www.construction21.org/espana/data/sources/users/412/orona-ideo-energia.doc
Renewable systems :

- Solar photovoltaic
- Solar Thermal
- Heat pump (geothermal)
- Biomass boiler

Renewable energy production : 100,00 %

Smart Building

BMS :
Management via ESCO

Smartgrid :
Selfconsumption of theenergyproducedontheroof of Orona Zero, with an installed power capacity of 230kWp of solar PV polycrystlinepanels.

Environment

GHG emissions

GHG in use : 13,60 $KgCO_2/m^2$/year

Methodology used :
Calener GT

Building lifetime : 70,00 year(s)

Life Cycle Analysis

Eco-design material : Prescriptionfollowing LEED and BREEAM

Water management

Rain waterfromthegreenroofsiscollected in a depositforfurther use in theirrigationsystem.

Indoor Air quality

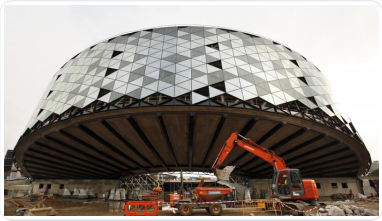
Excelentaccordingto ASHRAE LEED

Products

Product

Orona Zero Pixelatedfacade

Orona (diseño) - LKS (prescripción técnica)- Uxama (muro cortina) - Umetal (impresión dibujo) - Saint-Gobain (vidrio) - Wicona (carpintería)



xbarrutieta@orona-group.com

Product category :

Apart from having low thermal transmittance (U), the walls of the buildings are designed to adapt to different circumstances. The cylinder façade is made up of a curtain wall with a skin composed of triangular pixels which change from: opaque, translucent and transparent, depending on their position and the different circumstances regarding exposition to solar radiation, access to views, the relation with the use of internal space, etc.
With the aid of the superposition of these variations on the façade development, and taking into account the overall transmittance and a reference threshold for heat loss, the solutions for the outer and inner façades are designed, each with a different ratio of openings and opaque areas.

Costs

Construction and exploitation costs

Global cost : 110 000 000,00 €

Reference global cost : 45 600 000,00 €

Renewable energy systems cost : 1 700 000,00 €

Energy bill

Forecasted energy bill/year : 202 000,00 €

Urban environment

City Orona IDeO is the flagship project of the extension of San Sebastian's Technology Park in Hernani. The technology parks of the 21st century seek to integrate uses in the urban framework and aim at use intensity, good accessibility and associated services. In this respect, the project updates the concept of the city as something that agglutinates and acts as a meeting point for activities in its streets, squares and public spaces and in the care of its landscape. EcoBoulevard The EcoBoulevard is the linear park shaping the backbone of the Technology Park's new extension. This space is an image and reference point for the whole of the Park, and is characterised by its rich vegetation and careful landscaping in the recreation areas where pedestrians will have preference over cars. The EcoBoulevard ends in a sculpture-like observation point offering a view of the landscape, and connects with the city. The inside of Orona IDeO – innovation city is structured around a pedestrian axis which will join the area around the existing roundabout with the EcoBoulevard. The flow of people will pass through the main building which will serve as the entrance to the plaza. The Plaza The Plaza will describe an urban hall with a series of pedestrian areas welcoming researchers, workers and students who will share these spaces aimed at encouraging relationships and the exchange of ideas. The Plaza will be an open space for the people from the city and, together with the EcoBoulevard, will be consolidated as an urban Technology Park.

Land plot area

Land plot area : 23 000,00 m^2

Built-up area

Built-up area : 60,00 %

Green space

Green space : 15 000,00

Parking spaces

600 Underground parking lots and 300 surface parking capacityto share withtheTechnology Park.

Contest

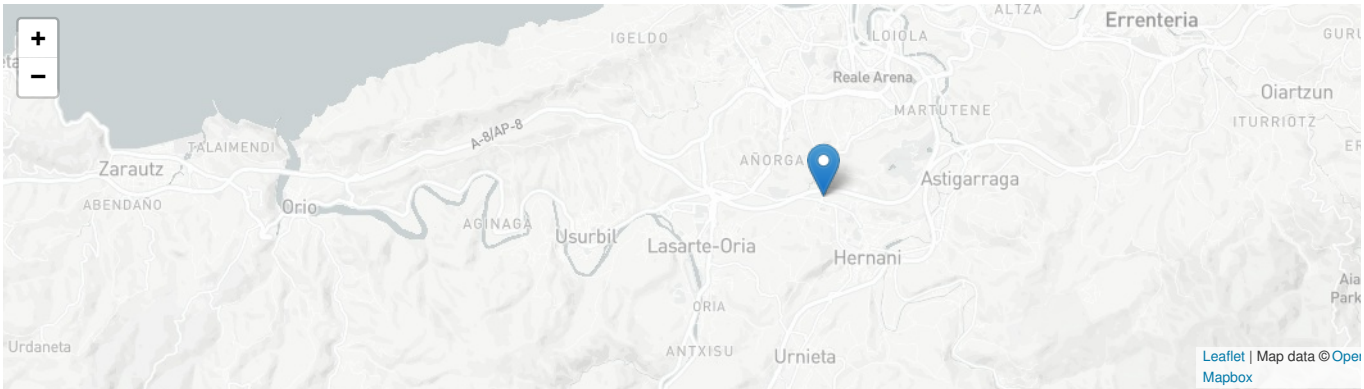
Building candidate in the category

Energías renovables

Edificios inteligentes

Edificios de consumo nulo

Salud y Confort



Date Export : 20230605222803