Cementiris de Barcelona, pioneers in Spain in the installation of dioxin filters

by Marta Aladrén Ribas / 2018-06-12 12:43:14 / Espagne / 6689 / ES

Year of commitment : 2010
Address 1 - street : BARCELONA, España

Green energies : Energy Efficiency

380 647 €

Builder
Sogesa

GENERAL INFORMATION

The main objective of the performance of energy efficiency in the crematorium of Montjuic is the use of the residual heat of the dioxin filter produced in the

cremation process in the kilns, to produce the thermal energy necessary to completely cover the demand for air conditioning (heating and refrigeration) and domestic hot water. The project also includes a consistent action in the renovation of current lighting systems by state-of-the-art systems and high efficiency.

The incineration process requires a large contribution of thermal energy through the combustion of natural gas in high-powered crematoria. This process generates a large amount of waste heat, which is currently dissipated in the environment by heat sinks. The residual heat is generated in the cooling process of the combustion gases. Cooling is necessary to be able to pass the gases through the dioxin filters.

To take advantage of the residual energy produced in the incineration process, a system has been designed that, through heat exchangers and hydraulic circuits, captures this energy and transports it to a central storage tank where water accumulates at a temperature between 80 and 85ºC . This hot water is used in three ways:

1) To directly feed a general heating circuit that has air handling units and fan-coils as terminal units. To heat the large spaces of the crematorium (oratory, ground floor hall, patio and cremation area), air treatment units are used which, by means of a heat battery, heat air with the hot water from the accumulator. The transport of hot air to the spaces to be heated is carried out by means of air conducts. In those spaces where the thermal load is lower, air-water fan-coils have been installed that drive the heated air directly into the environment.

2) To warm up by means of a hydraulic circuit two domestic hot water tanks. With these two accumulators the demand for hot water is covered so that crematory operators can shower.

3) To indirectly feed a general refrigeration circuit that has air handling units and fan-coils as terminal units. The production of cold is done by an absorption machine that is fed from the heating accumulator. The cycle of refrigeration by absorption is a type of cycle in which cold is generated from a source of heat (in this case, the residual heat of the ovens), unlike the classic refrigeration cycle by compression, in which cold is generated from electrical energy. A central cold water accumulator having an accumulation temperature of 7 ° C is fed from the absorption machine. From this accumulator, the general refrigeration circuit that uses the same terminal units as the heating circuit is fed, since these are of 2 tubes.

The distribution system of thermal energy is formed by hydraulic circuits that have all the necessary elements (pumps, valves, probes, etc.) so that the operation of the system is correct and efficient. This is ensured through a control system and monitoring that automates the operation of the installation and allows the visualization and control of variables remotely. With this system, it is expected to cover 100% of the thermal energy demand of the Montjuic crematorium. In any case, the installation has a booster system formed by natural gas boilers prepared to act in a modulated manner when the heat exchanger outlet temperature is not sufficient, mainly due to maintenance shutdowns.

The overall performance of energy efficiency in the crematorium of Montjuic is completed with the renovation of all the lighting systems. The proposal consists of the installation of systems with LED technology, and the energy saving in the consumption of lighting is approximately 70%.

Progress Status

Delivered

Data Reliability

Self-declared

Funding Type

Public

Sustainable Development

Attractiveness :

This initiative came after an energy efficiency audit, in which the management of Cementiris de Barcelona saw an important opportunity to improve the energy efficiency of the Montjuic crematorium, becoming involved in the project.

Well Being :

Social Cohesion :

In this installation, funeral companies have been especially interested, as it is a use of residual energy from the process of cooling the gases of the cremations, in the case of having dioxin filters.

Preservation / Environmental Improvement :

Responsible use of resources :

In this case, by means of exchangers in the cooling circuits of the dioxin filters it is possible to capture the residual heat produced in the gas cooling process (which was wasted by aeroevaporators) to directly generate ACS and heating for the entire building , since the gases have to be cooled from about 900 ºC to about 160 ºC. It has also been implemented in this system an absorption machine that allows cooling the building taking advantage of this waste heat in the heat.

Governance

Cementiris de Barcelona, SA

Holder Type : Public Local Firm

Sogesa

Builder Type : Other

Manager / Dealer Type : Private

Sustainable Solutions

Harnessing residual heat from the cooling of cremation gases

Description :

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The strong point is to have a residual energy to generate DHW and heating directly, without any process.

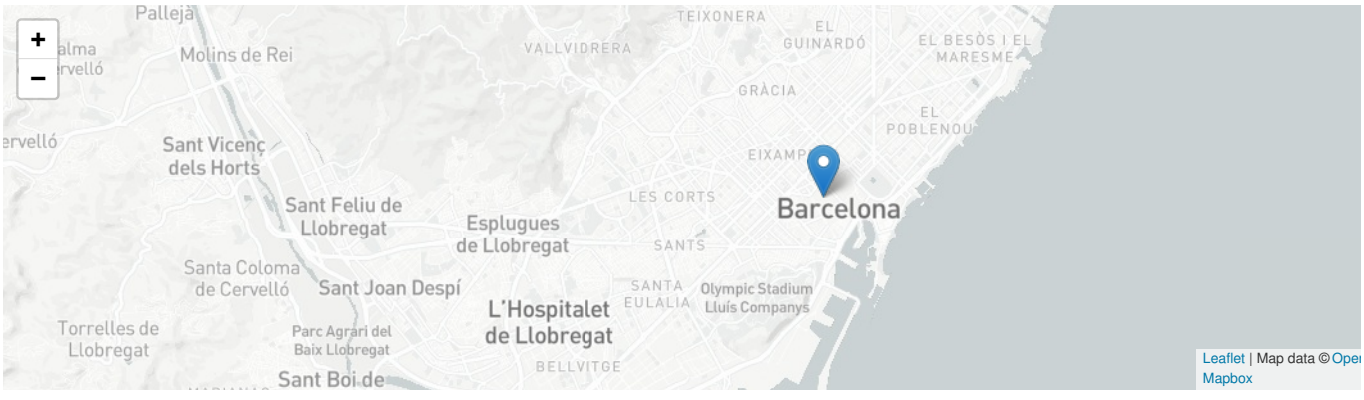
- Energy/climate :
- Renewable energies

Contest

Building candidate in the category

Premio de los Usuarios

Gran Premio Ciudad Sostenible



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