

# **UFI - Sustainable Development**

## **Award 2018**

**Document made by IFEMA- Feria de Madrid**

***Direction of International Development***

**January 2018**



## Index

**1.- Introduction.**

**2.- Ifema and sustainability.**

**3.- Geothermal energy project:**

**3.1. Technical description.**

**3.2.- Objectives**

**3.3.- Why this alternative?**

**4.- Conclusions.**

## **1.- Introduction:**

The trade fair and congress sector must be particularly sensitive to protecting the environment and sustainability.

The ephemeral nature of its events, the need for working always within very limited time frames, and the constant production of structures, as well as the movement of large masses of people, may not favour an effective policy in this regard.

In recent years we have seen proposals that no doubt are positive for recycling and managing waste, the cornerstone of a sustainable, responsible attitude towards the environment, which is unquestionably one of the most sensitive issues in our activity. With them, we have not only been able to reduce the impact but also to raise the awareness of users, companies and individuals about the existing opportunities to improve our response to the environmental challenges we face on the planet.

What the MICE sector offers us is just such a possibility of multiplying the effect of any action, and this is what has led Ifema to take an ambitious step forward in its environmental commitment, taking on projects that will not only bring an improvement in these areas, but also be an example for the industry as a whole.

The geothermal project is inspired by this attitude.

## **2.- Ifema and sustainability:**

Ifema has always shown its commitment to sustainability, which it considers one of its strategic pillars. In this sense, the ongoing business activity has not led us to forget the need for adopting policies to promote sustainability.

For instance, these are some of the projects implemented recently:

- Previous projects:
  - Replacing its fleet of commercial vehicles with green vehicles.
  - Implementing LED lighting systems for throughout the exhibition's floor space.
  - Photovoltaic power panels.

Yet Ifema is also aware of the opportunity afforded by professional trade fairs. That is why it has promoted events in its schedule that directly tackle these issues, enabling them to become not just commercial fairs, but also forums for debate.

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In this sense, Ifema has events such as:

- Genera - Alternative Energy and Energy Efficiency International Trade Fair (Which, in addition to its Madrid edition, also has a Latin American version that was held successfully in Santiago de Chile).
- FSMS - Sustainable Environmental Solutions Forum. Includes:
  - SRR - The Recycling and Recovery International Trade Fair.
  - TECMA - International Town Planning and Environment Trade Fair.
- SIGA - Innovative Water Management Solutions Exhibition.

In addition, most of its industrial events address sustainability, either through specific trade show areas or through opinion conferences.

The latter are particularly relevant in sectors such as construction, electrical equipment or logistics.

Through its international strategy, Ifema also contributes to the promotion of these policies in other countries, which is the basis for all of our counselling and consultancy projects and is included in the events we hold in other countries.

### **3.- Geothermal energy project:**

#### **3.1. Technical description:**

The purpose air conditioning via geothermal energy is to meet the base demand for air conditioning at the IFEMA headquarters in Madrid by using energy from very low-temperature subsoil, achieving savings in the consumption of the air conditioning system through a renewable energy resource.

Building the installation has involved the perforation of 39 geothermal bore holes, each with an approximate length of 150 metres in depth, laid out in rectangular grid. This totals 5,850 metres of perforations, a length that will allow the soil to remain free of thermal saturation over time. The bore holes are connected to a new geothermal heat pump of 355 kW of thermal heat output, and 305 kW of cooling output.

The perforations were performed in the soil adjacent to Hall 1 of the convention centre premises. The collectors are arranged at least 8 m apart, which allows the thermal exchange capacity with the soil to be optimized, thus avoiding possible interferences with heat transmission and interactions between them. This also promotes the thermal balance of the soil.

### **3.2.- Objectives:**

Using geothermal energy to ensure partial coverage of the needs at the headquarters.

The geothermal installation is designed to meet the base demand for air conditioning, in tandem with the current centralized air conditioning installation. The Central Building (South Gate) has 25,200 m<sup>2</sup> of surface area distributed in four (4) storeys above ground level and two (2) underground storeys. This is a glass building that is located between halls 1 and 2 where the South Access Gate to the convention centre premises is located.

The designed geothermal installation already has a water-water heat pump with the capability of simultaneous output of cold and hot output. This equipment is connected to the hot and cold circuits of the thermal power subplant in the office building, and to the new geothermal uptake circuit.

The selected geothermal heat pump has an energy recovery system, so its three inlets/outlets are connected to the soil circuit, the hot water circuit (which will have a buffer tank in the heat pump return) and the cold circuit. The options provided by this system are extensive and vary based on the existing demands.

When there is a demand for heat, the heat pump is set to provide heat to start up the buffer tank, discharging the cold generated into the soil. However, if the installation is demanding cold at that time, it would release the cold previously in the installation and subsequently work against the soil circuit.

To generate heat, the machine's evaporator is connected to the hydraulic soil circuit, using the geothermal exchange system as source of heat. The heat pump condenser will feed the demand circuit of the installation, transferring heat to the installation for heating the building based on the temperature of the buffer tank.

The installation of this system to make use of low-temperature geothermal power has allowed IFEMA to reach the following milestones:

- Electric power savings of 81 MWh/year.
- Natural gas savings of 707 MWh/year.
- 80 TEP reduction of primary energy.
- Cutting CO<sub>2</sub> emissions by 200 tonnes.
- Annual economic savings of €40,000.

### **3.3.- Why this alternative?:**

With this low-temperature geothermal power system the building's base thermal demand for air-conditioning will be met, meeting the following energy, environmental and socio-economic challenges:

- Using geothermal energy as a renewable source of energy due to its permanent supply capacity and its great potential, becoming a strong option with strong guarantees.
- To offer the same comfort, but with much lower electrical power needs than with a conventional heat pump.
- Avoiding the annual emission of carbon dioxide to protect the climate and the environment as compared to other traditional heating systems based on combustion.
- Developing and promoting a promising renewable energy resource, thus leading to additional employment and manufacturing opportunities.

### **4.- Conclusions:**

The project that we are presenting for these awards is ambitious and positions Ifema as one of the leading companies in the adoption of measures that contribute to sustainability and improving the environment.

They involve, not only an economic investment, but also a commitment, which is reinforced by their relationship to industry agents to spread knowledge of their their benefits by using our main sources of publicity: trade fairs.

In fact, in this specific case, Ifema has promoted the relationship with the Official Association of Geologists of Madrid for the publicizing geothermal power within the Genera framework. We are certain that this action will spread knowledge of this technology and, consequently, lead to further initiatives on the matter.

For Ifema, it is just another in its commitment to sustainability.

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