

# COMPARATIVE RESEARCH BETWEEN TWO AIR CONDITIONING SYSTEMS, HYDRONIC FED BY GEOTHERMIC ENERGY AND AN AIR-AIR SYSTEM, FOR THE SAME BUILDING CONSIDERING ENVIRONMENTAL IMPACT

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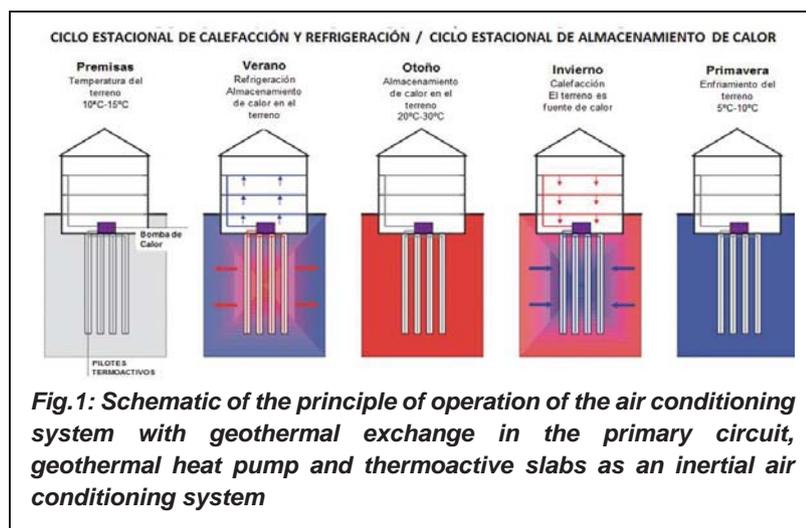
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In the following research, a comparative analysis between two air conditioning systems will be made. [1] One is going to overview an air-air conditioning system and the other one an hydronic system fed by geothermic energy [fig.1].

For this research a protected building has been chosen, placed in the centre of Madrid. It is the old military building Daoiz y Velarde, refurbished into a children's theatre and cultural space. The choice made for this building has been made due to the fact that working in a safe building makes it easier to draw comparative analyzes.

The structure and the frontage can't be modified, therefore the research should start from the conditions found from the beginning.

Finally, it has to be adapted to the C.T of the building, taking in consideration some of the specific requirements for cultural and children's spaces.

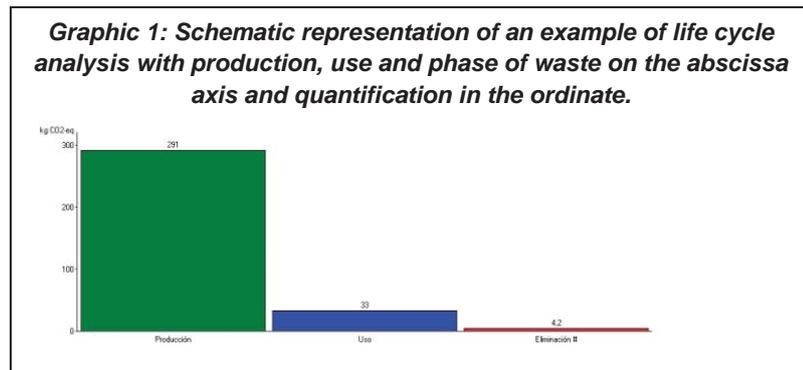


For those analyses, we have to take in account the optimal conditions that a building requires in choosing the most appropriate air conditioning system for the environment (e.g. temperature, humidity and different parameters depending on the user).

An informatic tool for the analysis of life cycle, materials, energies, waste etc., should be used for both air conditioning systems. The aim of this research is to find out and demonstrate which of the systems has lower pollution, a global view of the whole Life cycle, extraction of raw materials, construction and earthworks, use and also to consider waste.

Ultimately, in this research we want to gain a global vision of the whole life cycle, called for the cradle to the grave [2]. This includes, from the production of the raw materials which makes up the machinery, to the transport of equipment. The energetical consumption during the installation, energetic consumption during using face and the last elimination of waste will also be taken into account.

Using the software we can collect data and make the graphics more coherent [Graphic 1.] when comparing both systems and measuring them with the same criteria and scale [3].



This graphic will be represented with the same measurement and we will then be able to see which of the both systems has a higher environmental benefit. Finally, we will then draw out conclusions from the comparative research.

## REFERENCES

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