

PHOTOVOLTAIC EVAPORATIVE SOLAR CHIMNEY FOR DRIVING AN AIR CONDITIONING SYSTEM AND HEAT DISSIPATION

DESCRIPTION OF THE INVENTION

This invention is a photovoltaic evaporative tower (chimney) with dual functionality. Firstly, the cooling of a photovoltaic panel is achieved by an air stream by its rear face, and at the same time it is used as heat dissipation system of a refrigeration cycle. To accomplish this purpose, the system is divided into two main parts. Following the path of the air inside the first section, called evaporative zone, has a series of nozzles which atomize water in parallel flow with the air descending. As the water falls, a small part evaporates cooling the rest. This section works as a small scale cooling tower. The air, that has been in contact with water has increased humidity, and may even have reduced its temperature (depending on operating conditions), begins to rise due to the flotation effect in the so-called convective zone. This second area is basically a solar chimney in which the heating of the air causes flotation of the same. In turn, the ascending air through the convective section cools the photovoltaic panel increasing its yielding.

BUSINESS FIELDS OF APPLICATION

Energy Sector. Efficient Energy Buildings. Acclimatization

TECHNICAL AND BUSINESS ADVANTAGES

Attempts carried out to date for the use of solar energy in air conditioning systems have been based on technologies for thermal facilities medium and large (> 50kW). In these systems, solar panels, flat or vacuum, received solar radiation and converted it into thermal energy by means of fluid heating. This fluid was used in an absorption or adsorption system in order to produce air conditioning. However, due to technological reasons, as hydraulic complexity and control of such systems, and mainly to economical reasons, its implementation has been limited.

The invention described herein, seeks to improve the efficiency of a photovoltaic panel through evaporative cooling, this combined with the use of a water-condensated air conditioning system, leads to the design of an efficient solar air conditioning. In addition, both low technical complexity of the system and its low cost, can provide some very interesting competitive advantages to companies that exploit this technology.

DEVELOPMENT STAGE OF THE TECHNOLOGY

It has been developed at the laboratory stage.

INDUSTRIAL PROPERTY RIGHTS

Patented in Spain. The Miguel Hernández University of Elche owns 100 % of patent rights.

TYPE OF COLLABORATION SEEKED

License Agreement with companies willing to manufacture and commercialize the technology.

RELATED PICTURES



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