

A Synopsis of Solar Support Air Condition Arrangement in Office at Summer Days

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Abstract

In summer days are stunning, nevertheless within the workplace a hot day will be altogether disagreeable .Because productivity will suffer beneath such circumstances, therefore more and more constructions are being tailored with Air-Conditioning scheme. Most of the tiny offices building uses standard cooling machineries through which high electricity peak load is important for driven the compressor system of air conditioning .Because of consumption high energy and demand of high electricity of peak load. solar support air conditioning system is employed to resolve this drawback during which summer sun heat up the workplaces is additionally deliver the energy to chill the office by the utilization of thermal solar power .The solar power-assisted acquisition system uses the warmth from the radiation to initiative a thermally motivated chiller like absorption chiller. And for solar collecting, presently evacuated tube solar is employed to supply heat approximate 88c .At that heat supply is formed energy.

Key-Words: High electricity peak load; summer days; solar support air condition system; offices building; absorption chiller.

1. INTRODUCTION

In summer region the cooled the office by the use of air conditioning system air condition is the most common mechanism used for the purpose of cooling and for the comfort of employee of the offices .But high amount of electricity is required to driven this mechanism.

In many of the offices conventional cooling technics are used. But now a days our world become a smart world .Amount of the power is required to drive the compressor of the air condition scheme.

So the power for driving the compressor system solar energy is used .In this system power is generated by transforming solar supplied energy into electrical means of energy.

The solar supported air condition system habits the heat from the solar radiation to drive a thermally motivated chiller such as

absorption chiller .Due to this less amount of electricity is used as compare to conventional cooling system.[2]

The results of the project are:

- to increase the awareness of solar driven technologies to the frontal world.
- Valuation of solar equipment (counting chillers).
- Market physiognomies in each contributing island.
- A comprehensive analysis of the non-technical market barricades of both heating and cooling machineries and endorsements to incredulous them.
- Training of key market actors in insular areas and the development of a methodology and multilingual training material to train various groups of specialists involved in SC and chilling arrangement[4].

2. WORKING AND PRINCIPLE OF SOLAR ASSISTANCE AIR CONDITIONING SCHEME

The straightforward principle in arrears thermal driving cooling is thermochemical development of absorption: A liquid or gaseous ingredient is either involved to a solid, porous material or is taken in by a liquid or solid material. The sorbent is delivered with heat and is dehumidified. After “drying “, or desorption, the process can be frequent in the opposite direction. When giving water vapor or steam, it is stored in the porous storage medium (adsorption) and concurrently heat is released. Procedures are distinguished between closed refrigerant movement systems and open system according to the way in which the progression is carried out: that is whether or not the refrigerant comes into contact with the atmosphere. The latter is used for dehumidification and evaporative cooling .Both the procedures can further classified according to either liquid or hard sorbent. [4]

3. MAIN MACHINERIES IN THE SOLAR SUPPORTED AIR CONDITIONING

The main apparatuses in the solar Assist air conditioning system can namely: -

1. Hot water & chilled water storage
- 2 Solar collector
3. Chiller (cold production)
4. Fan coils.
5. Cooling towers [2].

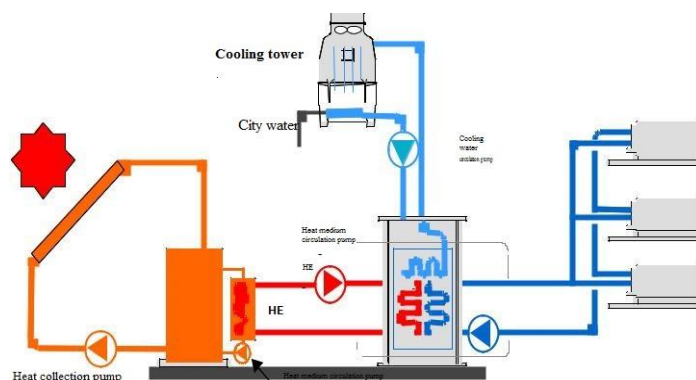


Fig.2- COMPONENT OF SOLAR ASSIST AC

FIG OF COMPONENT OF SOLAR ASSIST AIR CONDITION [2]

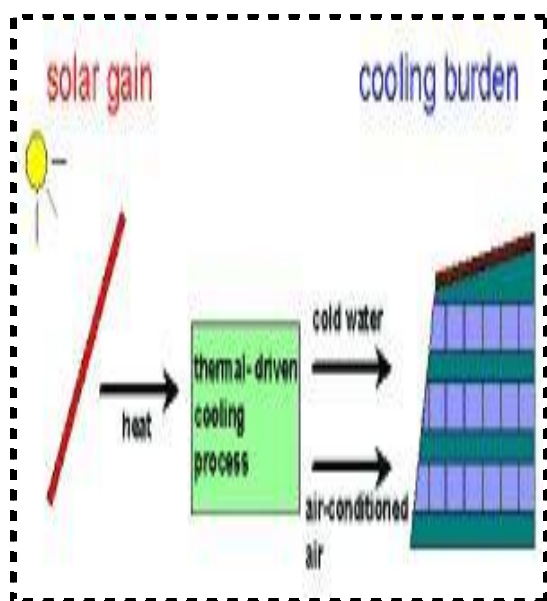


fig .1- Working of solar air conditioning system [1]

(4)EVACUATED TUBE SOLAR COLLECTOR

The solar accumulator is one of the main apparatuses in a solar assisted air conditioning system that transforms solar energy to the thermal energy that drives the chiller or cold assembly component [2]. Refer to Figure 1. Due to the high temperature necessity to drive the chiller in particular the absorption chiller, evacuated tubes solar collector will be a better choice due to its efficiency and capability to yield high temperature in assessment to flat plate solar collector. The average driving temperature for absorption chiller is between 80°C to 90°C depends on type of models by different constructors.[1]

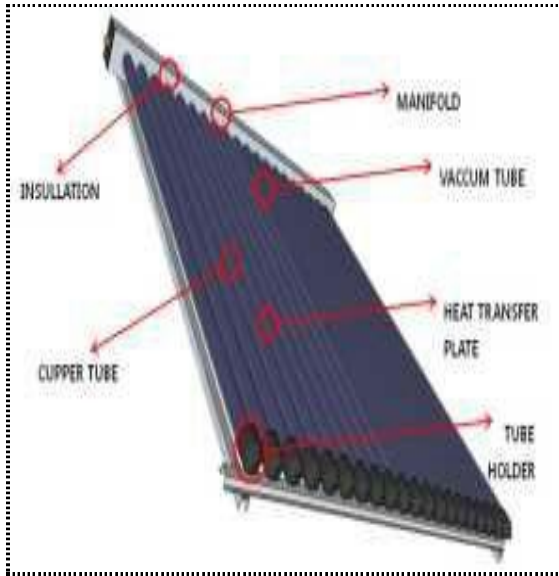


FIG.3. EVACUATED TUBE SOLAR COLLECTOR [8]

Currently, there are two types of evacuated Tubes solar collector, namely heat pipe type and the direct flow concluded type evacuated tubes solar collector. The heat pipe expatriate tubes solar collector consists of a heat transfer fluid that obligation the heat between the absorber and the header. (13)

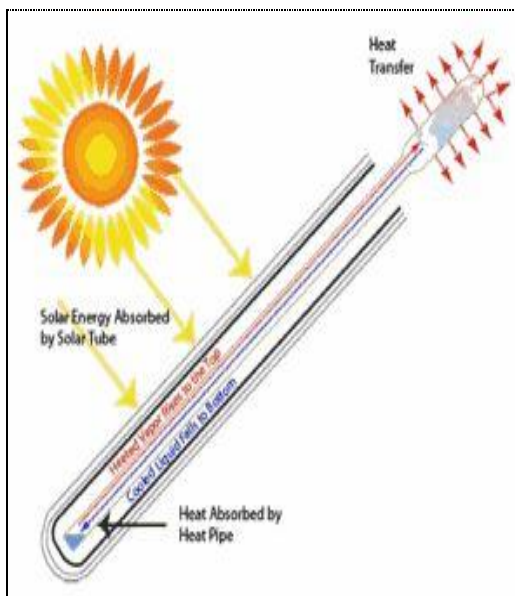


FIG.4-TUBE SOLAR COLLECTOR [9]

5. LAYOUT OF SOLAR COOLING.

A typical solar cooling arrangement consists of a common solar thermal system made up of solar collectors, a storage tank, a control autonomous

from the availability of solar unit, pipes and pumps and a thermally ambitious cooling machine, Most hoarders used in solar cooling organizations are high efficiency collectors presented in the market today (often double-glazed flat plate collectors or emptiness tube collectors).

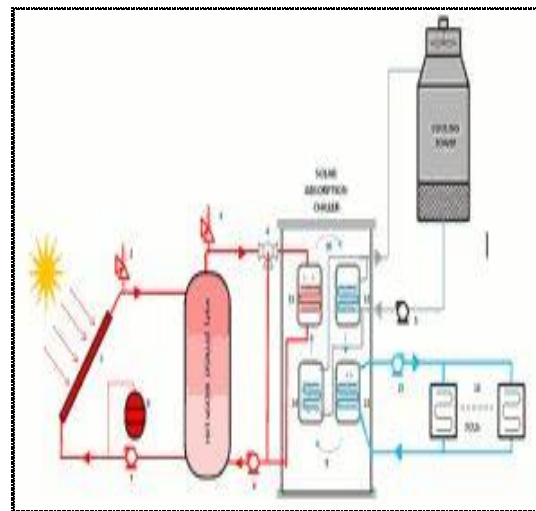


FIG.5-LAYOUT OF SOLAR COOLING

A typical layout of a solar cooling plant . The available solar energy, in the form of solar radiation flux, is developed by a solar panel, in order to produce a high infection fluid (generally water) that is accumulated in a storage tank. The chiller, the real heart of the process, uses the hot fluid of the packing tank to produce a cold fluid; the cold fluid can then be used in a normal cooling plant similar to an electric fridge. On a typical day, the thermal storage tank acts as a buffer and enables the optimization of the asynchronous heat absorption during the hours of solar radiation and the cooling that may be desirable during a different time period making this element indispensable. Another frequently used layout that is very common for setting up on which the plant has to be utilize during both winter (for heating) and summer (for cooling), is the one shown in figure 2.3. In this layout two tanks are compulsory: one for the storage of hot water produced by the solar thermal panels and a second for the packing of cold liquid produced by the absorption machine (chiller). One conventional backup heat source (e.g. a natural gas boiler) is also present. The gridlock heat

source brands the operating periods of the solar cooling plant radiation.[4]

6. BARRIERS AND RECOMMENDATIONS

At the present time solar cooling technologies are neither as well acknowledged, nor as widespread as they should be. They have not yet enjoyed a substantial level of dissemination into the air habituation market in Southern Europe. One of the main objectives of the SOLCO project is to identify then non-technical barriers stopping further penetration of solar cooling technologies. This section classifies these barriers and recommends ways to speechless them.

(i) Mindfulness and know-how

- Lack of cognizance in potential users about the possibilities and benefits of using solar driven preservation plants;
- Most of the technical performers are not familiar with SC technologies, recommend Them as a solution to potential users;
- Most concocts are not completely cultivated ion this technology;

(ii) Demonstration

- A rather limited numeral of demonstration plants; by the end of 2007 there were almost 300 Solar Cooling systems in operation

(iii) Cost

- Relevant arcade actors claim that the high speculation cost limits prevalent application;
- Today's sorption technologies are, still, more exclusive in comparison to conventional chillers; this is more evident in the case of small scale captivation chillers (residential, small trade centers). Significant effort is prerequisite to develop the existing technology in order to reduce the cost of system:
- The use of sorption chillers requires in most cases the presence of wet cooling towers, which are covered by specific legislation to avoid the legionnaire disease. The conservation of such installations is more expensive and most of the potential users prefer to avoid them; [4]

CONCLUSION

In this day and age, Solar Cooling is both conceivable and reliable. Mistreatment of solar thermal energy for cooling is an efficient, intelligent and ecologically responsive way to use renewable energy foundations to meet our air conditioning requests. [4]

To era, there are not many connection solar assisted air conditioning system around the world. This is to show that solar assisted

air habituation system is still at its infant stage. There are still no homogeneous design procedures that exist and still lack operational experiences. It is also imperative to note that solar assisted air conditioning system involves greater effort during the design phase than a unadventurous system of the same application [6]. Therefore, field

data from intensive care of the solar assisted air conditioning system installation is very imperative in order to have a better overview of the performance in real operative time of this technology. With the worldwide sale of 69 million units sold of air habituation units (up to 20kW) and with the growth rate of more than 4%, small office submission using solar assisted air conditioning arrangement has great future potential [7].

Although solar assisted air habituation system has a high capital speculation but with a payback period of 8 years, it has made this technology a viable speculation for both the client and the developer of a small office building expansion. Finally, in order to promote and expedite on the dispersion of this potential technology, there must be a concerted efforts from both the management and the private sector to bring more awareness of this green knowledge to the community [2]

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