

Experimental View on Solar Air Cooler

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Abstract Air-conditioning is one of the major consumers of electrical energy in many parts of the world today and already today air-conditioning causes energy shortage in for example China. The demand can be expected to increase because of changing working times, increased comfort expectations and global warming. Air-conditioning systems in use are most often built around a vapor compression system driven by grid- electricity. However, most ways of generating the electricity today, as well as the refrigerants being used in traditional vapor compression systems, have negative impact on the environment

Keywords Solar energy, Photovoltaic cells, Centrifugal fan, Charge controller

Introduction

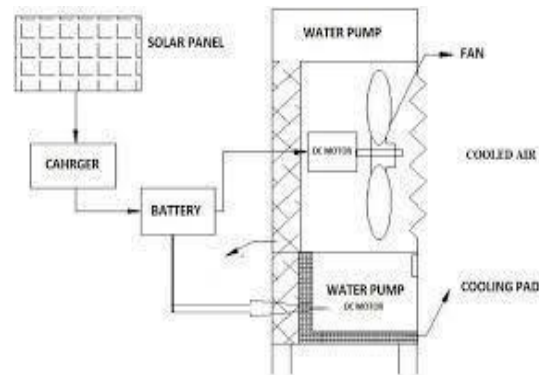
Solar power is stored in a battery. This power is used to run the air cooler whenever required. Solar energy means all the energy that reaches the earth from the sun. it is based on photo-voltaic or solar modules, which are very reliable and do not require any fuel or servicing. Solar power systems being considered as one of the path towards more sustainable energy systems, considering solar-cooling systems in village would comprise of many attractive features. this technology can efficiently serve large latent loads and greatly improve indoor air quality by allowing more ventilation while tightly controlling humidity. Solar energy is the world's most rich Stable and clean source of energy having a large potential. The total energy emitted from the sun is around 5200 times that of the global energy requirement. According to international institute of Refrigeration, air conditioning and refrigeration consumes around 15% of the total worldwide electricity and also contributes to the CO₂, CFCs etc. To overcome the problem of emission and fulfill the mismatch between the demands and supply of energy consumption the interest in utilization of solar based Air conditioning / refrigeration systems has increased gradually.

LITERATURE REREVEIW

Table 1 Literature Survey

Sr . No.	Ref.no. Author,year	Concept Use	Performance Evaluation Parameter	Claim By Concerned
1	Ashwani sharma 2015.	Air cooler using solar cooling system.	None.	Air cooler gives the cool and humid air.
2	Kotresh H.M. Kallesh.HC, 2017.	Solar Power Stored In Battery.	This Power is usedTo run the air cooler.	It is very reliable and donot require any fuel or servicing.
3	Prakash R. 2014.	Solar cooling system in village with many attractive feature.	None.	This technology can effectively serve large latent load.
4'	Mr. Devesh Kumar, 2016.	Solar cooling system	None.	To overcome the problem of emission and fulfill the mismatch between the demand and supply of energy consumption.

Methodology



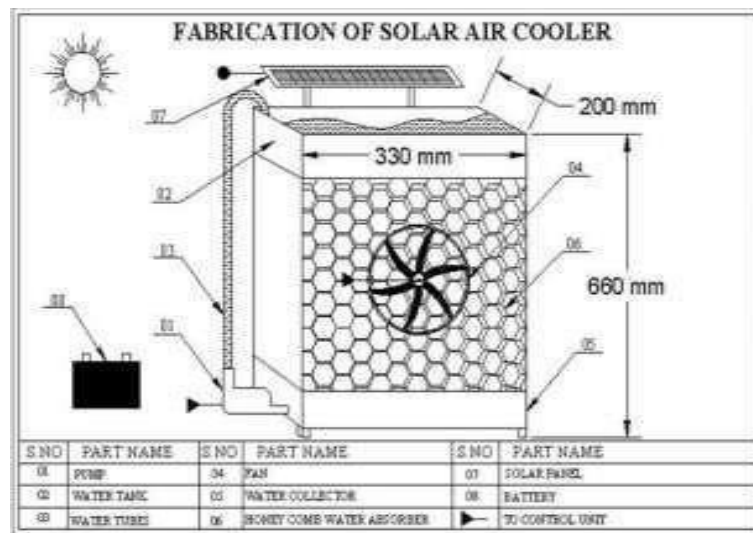


Figure 1 Process View

Solar panel consists of number of silicon cells, when sun light falls on this panel it generate the voltage signals then these voltage signals are given to charging circuit. Depending on the panel board size the generated voltage amount is increased. In charging circuit the voltage signal from the board is gathered together and stored in the battery. There are two tanks provided one at the top and another one at the bottom. The water from the top tank is made to pass through the tubes which are fixed between the two tanks. A fan is provided at the centre of the tank in such a way that the supply for the fan is coming from the battery which stores the current from the solar panel. When the water falls from the top tank to the bottom tank due to gravity, the fan is made to run, so that the cool air will be supplied all the way through. At the bottom of the tank, there will be a DC pump which pumps the water again to the top tank. The power for the DC pump is coming from the battery connected to the solar panel. The fan and pump is controlled separately with help of manual operated switch. Solar panel consists of

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ADVANTAGES

1. Simple in construction.
2. This system is noiseless in operation.
3. It uses non- conventional source of energy.
4. Power is stored in battery.
5. Maintenance cost is low.
6. It is work on conventional and nonconventionalenergy source.
7. High efficiency.
8. Energy saving is more.
9. Remote controlling is possible.
10. Long life as compared to ordinary cooler.
11. High and smooth speed operation.
11. Low power loss.
12. It improve the environmental value.
13. If we are not using the cooler in generally winter session we run another appliances on it like mobilecharger and light.

DISADVANTAGES :-

1. Initial cost is high.
2. Solar panel saves the energy during daytime only.
3. Driver is required to rotate the motor.

4. Complicated circuit.
5. Sensor is used.
6. For maintenance professional technicians required.

CONCLUSION

IT reduces the cost of air conditioning compare to normal air conditioner. It is eco-friendly. It is efficient for cooling in small area. Initial cost of its installation is high but on long run it proves eco-friendly. We got a lot of knowledge regarding our field which is not available in the book. We learnt how to work in a team by dividing the load and work with team spirit.

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