



FABRICATION OF SOLAR AIR COOLER

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ABSTRACT

Mechanical Engineering without production and manufacturing is meaningless and inseparable. Production and manufacturing process deals with conversion of raw materials inputs to finished products as per required dimensions, specification and efficiently using recent technology. The new developments and requirements inspired us to think of new improvements in air conditioning Engineering field. Nowadays air cooler is available in market. In our project, solar power is stored in a battery. This power is used to run the air collar whenever we required. Solar energy means all the energy that reaches the earth from the sun. It provides daylight makes the earth hot and is the source of energy for plants to grow. Solar energy is also put to two types of use to help our lives directly solar heating and solar electricity. Solar electricity is the technology of converting sunlight directly in to electricity. It is based on photo-voltaic or solar modules, which are very reliable and do not require any fuel or servicing. Solar electric systems are suitable for plenty of sun and are ideal when there is no main electricity. Our objective is to design and develop a solar system normally "solar air cooler".

Keywords: Solar Panel, Battery, DC Fan, Water Pump.

1.INTRODUCTION

Human beings give off heat, around an average of 100 kcal per hour per person, due to what is known as „metabolism“ . The temperature mechanism within the human body maintains a body temperature of around 36.9 degree C (98.4degree F). But the skin temperature varies according to the surrounding temperature and relative humidity. To dissipate the heat generated by metabolism in order to maintain the body temperature at the normal level, there must be a flow of heat from the skin to the surrounding air. If the surrounding temperature is slightly less than that of the body, there will be steady flow of heat from the skin. But is the surrounding temperature is very low, as on a cold winter day the rate of heat flow from the body will be quite rapid, thus the person feels cold, on the other hand on a hot summer day, the surrounding temperature is higher than that of the body, and so there cannot be flow of heat from the skin to the surroundings, thus the person feels hot. In such a situation water from the body evaporates at the skin surface dissipating water from the body evaporates at the skin surface dissipating the heat due to metabolism. This helps in maintaining normal body temperature. But if the surrounding air is not only hot but highly humid as well, very little evaporation of water can take place from the skin surface, and so the person feels hot and uncomfortable

2. OBJECTIVE

To make aware of non conventional energy sources to reduce environmental pollutions. This product preferably suitable for villages, because they face lot of power cut problems in summer (around 12 to 14 hrs in day). And for offices and schools which runs in day to which save energy. As air-conditioning and refrigeration consumes more power and mainly cost of refrigerating and air conditioning products are very high. So would like develop product which runs by solar energy and provide cooling effect for house hold food items at lower cost.



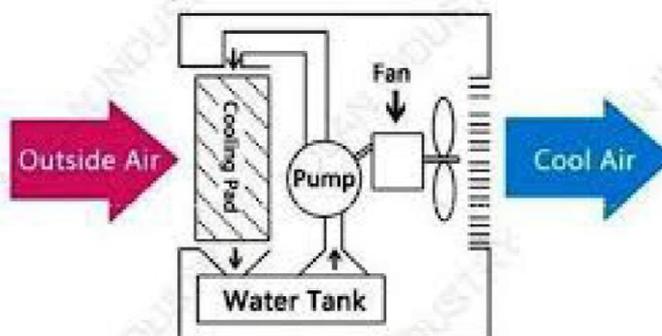
3.METHODOLOGY

The solar panel is converting sun rays to the Electricity by “Photo-Voltaic Effect”. This electrical power is stored in a 12 V battery. Battery D.C power is used to run the D.C motor and D.C water pump. Block diagram, Photo-voltaic Effect and major components of our project are already discussed in the above chapters. The D.C motor is coupled with impeller blades. The D.C motor runs when the air cooler button is ON, the impeller blades starts rotating. The water pump is used to circulate the water to the blower unit. The forced air flows through the water which is sprayed by water pump, so that the cold air is produced. The switch control is used to ON/OFF the solar air cooler circuit

4.LITERATURE REVIEW

Man has needed and used energy at an increasing rate for its sustenance and well being ever since he came on the earth a few million years ago. Primitive man required energy primarily in the form of food. He derived this by eating plants or animals, which he hunted. Subsequently he discovered fire and his energy needs increased as he started to make use of wood and other bio mass to supply the energy needs for cooking as well as agriculture. He added a few dimension to the use of energy by domesticating and training animals to work for him. With further demand for energy, man began to use the wind for sailing ships and for driving windmills, and the force of falling water to turn water wheels. Till this time, it would not be wrong to say that the sun was supplying all the energy needs of man either directly or indirectly and that man was using only renewable sources of energy. The industrial revolution, which began with the discovery of the steam engine (AD 1700), brought about great many changes. For the first time, man began to use a new source of energy, viz. coal, in large quantities. A little later, the internal combustion engine was invented (AD1870) and the other fossil fuels, oil and natural combustion engine extensively. The fossil fuel era of using non-renewable sources had begun and energy was now available in a concentrated form. The invention of heat engines and then use of fossil fuels made energy portable and introduced the much needed flexibility in mans movement. For the first time, man could get the power of a machine where he required it and was not restricted to a specific site like a fast-running stream for running a water wheel or a windy hill for operating a windmill. This flexibility was enhanced with the discovery of electricity the development of central power generating stations using either fossil fuels or waterpower.

5.DESIGN





Major components



6.CONCLUSION

The sun is often regarded as the ultimate answer to our energy problems. Sun provides a continuous supply of energy that far exceeds our current energy demand. It is free of cost, available in plenty, found everywhere and has no political barrier. The Photovoltaic cell (PV) or solar panel attracts the radiation from the sun and converts it to electrical energy which is used to charge the dc battery in order to power the dc fan. The unavailability of electrical power from our electricity generating company has nothing to do with the solar energy which is always available. Also, overcharging of dc battery which can damage the battery is being controlled by the charge controller. Therefore the dc power supplied to the fan is obtainable from the solar charged 12 V battery this battery is used for air cooler cum heater system

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