

# Instructors name research paper example

[Environment](#), [Electricity](#)



## **Solar Energy**

Solar energy is a radiant heat and light from the sun being harnessed to provide electricity, heat, cooling, hot water, and light for domestic or industrial use. The harnessing involves a number of technologies including solar hot water, photovoltaic systems, solar electricity, daylighting and passive solar heating, and solar process heating and cooling. The invention of the solar energy dates back to 1767 when Horace-Benedict de Saussure, a Swiss scientist invented the first solar collector which became widely known as the first oven using solar energy (Foster et al. 7). Saussure's solar collector was an insulated box having three glass layers covering to absorb the heat energy and the heat reached 230 degrees Fahrenheit. In 1839, Edmund Becquerel, a French physicist made a discovery that the sun's radiation are capable of producing electricity through a " photovoltaic effect"

## **How Solar energy Works**

Sun produces energy through the consumption of hydrogen through nuclear fusion reactions. The transmission of the solar energy to the earth happens in portions known as photons. The conversion of sun radiations into energy happens through a process known as photovoltaic process. The sun's radiations are absorbed by the solar panels through the semi conductor cells made of silicon. When the sun radiation hits the silicon cells, the radiation is converted to an electric current. Before connecting the electric current into the electricity grid, the current passes through a converter for its conversion from Direct Current (DC) to Alternating Current (AC). In addition, solar energy harnessing is also done using the solar thermal concentrating

system. This system involves concentration of sunrays using lenses or mirrors thus producing extremely high temperatures reaching 3000 degrees Celsius and this heat is useful in industries and the production of electricity (Foster et al. 16). Solar water heating system is also a form of sun radiations harnessing which involves the heating of water using the solar energy.

### **Advantages of Solar Energy**

Solar energy is non-polluting, and it is the appropriate alternative for fossil fuels including petroleum and coal because it is emission free. The use of solar energy ensures that there is minimization of air pollution. Electricity generation through the solar power emits no poisonous gases into the atmosphere, and there is no noise pollution. Solar power is universally available regardless of the geographic location as long as there is sunshine. The generation of electricity through solar energy is viable in places, which are inaccessible to electricity cables. Arguably, solar energy systems are maintenance free and last for several years. There are no recurring costs once the panels have been installed, and addition of extra panels does not require a major overhaul (Richards 11).

### **Disadvantages of Solar Energy**

Solar power is a source of energy with the most potential however, it has a number of disadvantages. First, the cost of installing solar energy system is very high and this makes it unaffordable to many users. Solar panels consist of silicon and other toxic materials such as cadmium, lead, and mercury, which harmful effects on the environment. Furthermore, the solar energy systems have efficiency of less than fifty percent, and this means that most

of the sun's energy goes to waste (Foster et al. 101). The efficiency of the solar panels depends on the amount of sun's radiation, which varies depending on cloud, season, time of the day and the geographical location.

In conclusion, despite its few disadvantages, solar energy is a safe form of green energy because it helps in reducing air and noise pollution resulting from other forms of energy especially the fossil fuels. Solar energy is also relatively cheaper compared to hydroelectric power generation and it can be produced at homes.

## **Work Cited**

Foster, Robert, Majid Ghassemi, and Alma Cota. Solar energy: renewable energy and the environment. Boca Raton: CRC Press, 2010. Print.

Richards, Julie. Solar Energy. New York: Marshall Cavendish Benchmark, 2009. Print.