Abstract

Today, the planet is going through a major energy crisis, this due to fossil fuels like oil, coal and gas begin to run out, reason why there is interest in renewable energies such as solar energy or wind power, which are gentle with the environment. In recent years the production of photovoltaic panels has increased and the price of these has decreased significantly, hence we are drawing upon to use this technology, this added that Colombia has a good sun energy potential. Among the advantages of solar PV is the sun been a free and an inexhaustible energy source, is a quiet, clean and friendly system to the environment because it produces no harmful emissions or polluting gases, plus the generation of solar photovoltaic energy it is obtained at the site of consumption, whereby no losses occur for power transmission and distribution; as the system has no moving parts, it requires minimal maintenance and has a lifespan of about 40 years.

This work offers a vision of solar energy as an alternative to the depletion of fossil fuels and incidentally contribute to improving the environment without leaving aside technical analysis. Hence, it is designing and implementing a functional prototype refrigeration to improve the efficiency of photovoltaic solar panels. Given that solar panels currently have a range of efficiency ranging from 17% to 20%. Then, the cooling system has a hardware that monitors real-time variable voltage, current, potency and temperature on the surface of solar panels. Once it is done, it interconnects with a graphical interface for data analysis and processing. Subsequently, a statistical study is performed to observe the influence of temperature and solar radiation environment on the solar panels. That is, a study to assess the conditions of operation and behavior of the solar panels over time. Finally, the results showing the increased efficiency of photovoltaic solar panels is presented.