

Ecological fridge prototype**Prototipo de nevera ecológica**

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Abstract

This investigation proposes a behavior that has a peltier cell, isolated with Styrofoam recyclable matter, as well as, analyze if the solar radiation that influences the actuation of said system for cooling. For this, they reproduce the characteristics of a refrigeration chamber with a peltier cell.

Celda, Calefacción, Enfriador, Electricidad, Ahorro

Resumen

El objetivo de esta investigación es analizar el comportamiento que tiene una celda Peltier, que en dicho sistema se encuentra aislado con material reciclable de espuma de poliestireno, así como, la radiación solar que influye en el accionamiento de dicho sistema de refrigeración. Para ello, se reproducen las características de una cámara de refrigeración con el uso celdas Peltier.

Celda, Radiación, Enfriador, Electricidad, Ahorro

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Introduction

Currently the problem is the consumption of electrical energy and the high demand for cooling systems that exist as comfort systems, this project proposes to take advantage of renewable energy in a technology system based on Peltier cells. NEVESOL (ecological refrigerator) which uses the temperature difference generated between the semiconductor when a current flows through it, which is induced by a solar panel that feeds and stores a battery, in this way we can promote awareness about the use of clean energy demonstrating that they are safe and an alternative to fossil energy.

Within the Electromechanical Engineering career of the Instituto Tecnológico Superior de Huatusco, it is sought that students perform practices to obtain a comprehensive training where they can develop the skills and abilities they have in the industrial sector by giving them an appropriate solution, so a cooling machine is built that allows learning linked to the design and manufacture of a real functional object.

Methodology to be developed

The prototype is an electromechanical system whose operation consists of a Peltier plate which makes our entire system work, which is responsible for the refrigerator can cool with a maximum electrical power of 107.8W, maximum heat power 62. 2W, operating voltage of 12V, control voltage from 3V to 16V and a weight of 22 g, a solar panel that feeds a battery, heat sink 12Vdc with rated capacity of 7Ah without memory effect, highly secure sealing, long life cells with terminals of 1.06 cm, supports up to 300 ° C and weighs 2.21 kg.



Figure 1 Prototype components

Results

It depends on the mobility that will be found or the location in which the machine is located since the radiation is the fundamental part and the energy will be used in its best use of Peltier cells through an analysis of consumption radiation we managed to have a good use of solar energy in the city of Huatusco de Chicuellar is average all in order that the student community get the knowledge through the design, calculation and application of alternative energy that we will live in future years.



Figure 2 Final prototype (refrigerator, refrigerator)

Conclusions

There are few systems that have made use of Peltier cells, but today the inclination in consumption due to the habits and requirements of society drive to develop machines with applications aimed at small consumers, and therefore, of smaller dimensions and capacities, which represents an opportunity for this technology formerly abandoned by large industries. The low power of the thermoelectric modules compared to refrigerators, the power supply at a voltage of 12v and the capacity of the cells to produce refrigeration.

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