RRCA21

Rio Rancho Cyber Academy

Thermodynamics

Ice Ice Power Baby

The purpose of this project is to assess the efficiency of using a refrigerator as a solar power energy device, to try to find a way to improve energy efficiency. The first stage is building a computer simulation in C++ to demonstrate the thermodynamics of typical household refrigerators. This model will be validated against real-world data from the energy star website (listed in sources). Then the excess solar energy used during the day will be stored in a refrigerator, by bringing it down to its lowest, safest temperature will be incorporated into the model. Then using this stored, thermal energy the length of time that the energy will keep the refrigerator’s interior sufficiently cold for food safety before reapplying power to the refrigerator will be found. This will be reflected in the code by modifying the refrigerator’s thermostat power cycle settings to simulate solar power availability. Finally, energy storage capacity (adjusted volume) of this cold storage method will be compared to a traditional battery bank method of storage. This project will also be submitted for the PNM energy innovation challenge (listed in sources).

Team Members

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Sources:

<http://thinkenergy.org/pnminnovation/>

<https://www.energystar.gov/productfinder/product/certified-residential-refrigerators/results>