CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
Steve J. Vargas

Project Number
J1034

Project Title
Saving Energy

Abstract

Objectives/Goals
The goal for my project is to inform people that they're ways to decrease one's energy bills by simply using a solar water heater in order to heat up water .

Methods/Materials
For my experimentation I needed a bucket, 1 1/4 gallons of water, laser and analog thermometer and a model made of the following items: 22 1/2 x 19 3/4 of plexiglass, 22 1/2 x 19 3/4 of plywood, 88 inches of pinewood 1 x 3, 6 16 x 1 1/2 diameter ABS pipe, 5 1 1/2 diameter x 180 degrees, 2 reductions 1 1/2 x 3/4, 10 inches of PVC 3/4, 2 valves of PVC 3/4, 2 PVC male adapters, 22 screws, 88 inches of double face tape, 100% silicon, ABS & PVC glue and black paper. First, I had to pour 1 1/4 gallons of water in a tub and would take the temperature of the water using an analog thermometer. I would then take and record the temperature of the environment at the time. Next, open both valves of the model and pour the water into one of the valves. Having that done, I'll have the model sit at an angle facing south for 60 minutes. With a laser thermometer take the temperature of the inside of he model and the tubing sticking out of the model, record the data. Then, dump the water out of the model and into the tub and take and record the temperature of the heated water. Repeat these steps according to the table.A model with better detail consisted of the following items: 1 13 1/2 x 1/2 copper tube, 1 12 x 1/2 copper tube, 8 7 1/2 x 1/2 copper tube, 9 1/2 x 90 degrees Ftg x C copper elbows, 8 1/2 x 90 degrees C x C copper elbows, 2 copper straps, 2 copper male adapters, 2 washing machine valves, 1lb. silver solder, 1lb. solder paste, ABS tube 2in. x 2 ft., 2 2in. ABS cups, 50in. double face tape, 14 in. x 11in. plywood, 14in. x 11in. plexiglass, 50in. 1 x 3/4 pinewood, 2 6 x 16 aluminum plate, prime paint spray can, high temperature spray can-black, 36 6 x 12.6mm screws and 48 1in. nails.

Results
As a result, I discovered that the water was able to double its heat using a solar water heater that consisting of the best solar water collector ideas. The water reached 2 major temperatures of 49 degrees Celsius and -2 degrees Celsius.

Conclusions/Discussion
In conclusion, solar water heaters could really benefit anyone who is trying to decrease their gas & electric bills or just someone who is thinking Eco-friendly. These devices could decrease your energy bills up to 75%.

Summary Statement
My project has to do with solar water heaters and the benefits one could acquire without using any source of energy besides the sun's rays.

Help Received
Dad helped build the model; Science Teacher helped improve project idea; Friends helped put board together