Thin Panel, Cylinder-Arrayed, Solar Water Heater

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The purpose of this science project is to build a Thin-Panel, Cylinder-Arrayed, and Solar Water Heater that could heat water to the maximum temperature and use it for homes in the rural areas. The hypothesis was If I create a Thin-Panel, Cylinder Arrayed, Solar Water Heater then I will be able to heat up water for general use. I did this by building a wood frame with a black backing. Then form there I cut soda cans in half to form rows, where the straight copper pipes will be placed. I used solder to weld together the copper pipes and other accessories that made the project workable. From there I decided to place a Plexiglas in front of the cans and copper pipes, to retain more heat. I did my testing for 55 minutes in 5 minute intervals. From my data it was concluded that the solar water heater with mirrors and no Plexiglas water was able to heat the water at a very high temperature of 30.27 °C in 20 minutes, a temperature difference of 12.27 °C higher and heated water up to 562 Watts with an average flow rate of 10.96 g/sec. Likewise the solar heater with mirrors and covered with Plexiglas heated the water to a maximum of 35.57 °C, a temperature difference of 17.6 °C in 30 minutes and heated water to up to 775 Watts with an average flow rate of 10.53 g/sec. The circulation method was conducted and shown that without reflectors and Plexiglas it was able to heat up the water to a maximum temperature of 17.2 degrees Celsius. The results of the experiment accepted the hypothesis. The Thin-Panel, Cylinder-Arrayed, and Solar Water Heater was able to heat up water.