



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Sarah Fong	Project Number J1111
Project Title H2O Generator	
<p style="text-align: center;">Abstract</p> <p>Objectives An ongoing problem in parts of the world is a lack of access to water. This project used the Engineering Design Process to create an H2O generator. The goal for H2O Generator was to build a condensation machine that successfully pulls water from the air. The criteria were: the device must be portable, made out of recycled materials or hardware store supplies, needs to operate through a variety of dew point temperatures and humidity levels, and eventually be solar powered.</p> <p>Methods The procedure to create the H2O generator was to start with a styrofoam container and attach two thermoelectric Peltier coolers to decrease the device's temperature below the dew point. The Peltier modules were attached to copper sheets to increase the surface area of the water production site. Two DC fans and heatsinks (recycled from computers) were added to the other side of the Peltier coolers to blow out the heat coming off of the Peltier coolers. This was all powered using a PC power supply that would later be attached to a solar panel.</p> <p>Results A test was conducted to show how humidity levels affect the amount of water produced. Under the right atmospheric conditions, an average of 5 mL of water was produced in about 10 to 13 hours. The trend showed at least 75% humidity was needed to create an optimal amount of water. The most water collected was 45.83mL in 79% humidity with a dew point of 11°. The data shows the goal was reached to produce water from the air using the process of condensation. The H2O Generator may be used to inexpensively generate water in areas of drought or with limited access to water.</p> <p>Conclusions The H2O Generator overcame the problem of dropping the temperature of the copper plate (water production site) under dew point to create a surface cool enough for dew to form.</p>	
Summary Statement The H2O Generator is a condensation machine that utilized recycled computer parts to create easy access to water for people in drought areas.	
Help Received I thought of and designed the H2O Generator myself and received help from my father who taught me the science behind and details within computer mechanics and wiring.	