

Innovation Park Water- Progress Report VI

Paulina Hall and Shannon Woolfolk

February 22, 2018

Dr. Psaker

The Governor's School at Innovation Park

Objectives: Finish ordering supplies and determine a plastic for the shell.

Materials and Methods

Progress:

The original plan was to create the shell of the two chambers using noryl plastic because it was heat resistant up to a temperature high enough to boil water. After extensive research, noryl plastic showed to be too expensive. Due to the goal of keeping the product as cheap as possible, further research was conducted on what plastic should be used to encase the chambers. The primary concern was finding a material that would not melt or pollute the water when the water heater is placed inside to boil the water. Polycarbonate plastic was decided on because it is heat resistant up to a degree higher than 212 degrees Fahrenheit, the temperature at which water boils, and it is significantly less expensive than most industrial grade plastics. It was important that the plastic bought was UV protected, which is what prevented the material from being nylon. A supply order form was created for the polycarbonate plastic and submitted, so once the plastic arrives, construction of the first and second chambers can begin.

In order to determine the amount of plastic needed, the dimensions of the water purification device were drawn to scale. Already having the design and shape in mind and planned, Figure 1 shows the drawn to scale dimensions of the first and second chamber without including the connection of the battery, charge controller, and solar panel to the heater in the first chamber. A general sketch of the design of the filter, including the inner components, was also drawn to help solidify some of the minor details and functions of the filter. This is shown in Figure 2.

Two accessory wires were purchased in the previous two weeks and once they arrived, the solar panel was able to be connected to the charge controller. The accessory wires, one male

and one female, needed to be stripped more to allow them to make necessary contact with the metal in the charge controller. Once the wires were stripped, the connection between the wire and the charge controller is enough to keep the wires in place and make a solid connection.

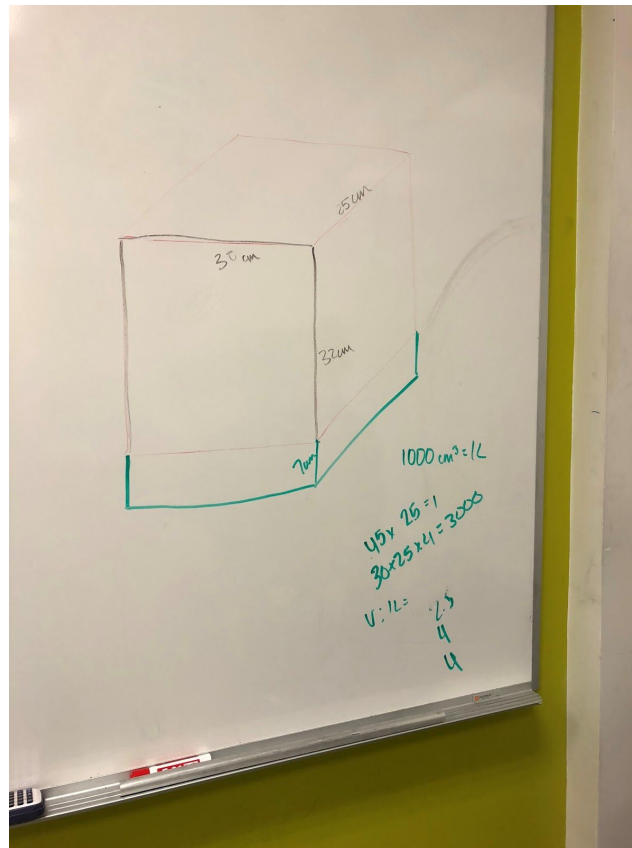


Figure 1: This image shows the sketch of the outer body for the filter and the approximate dimensions decided for it. It also shows the calculations for the number of liters of fluid that will be able to be placed in the water filter.

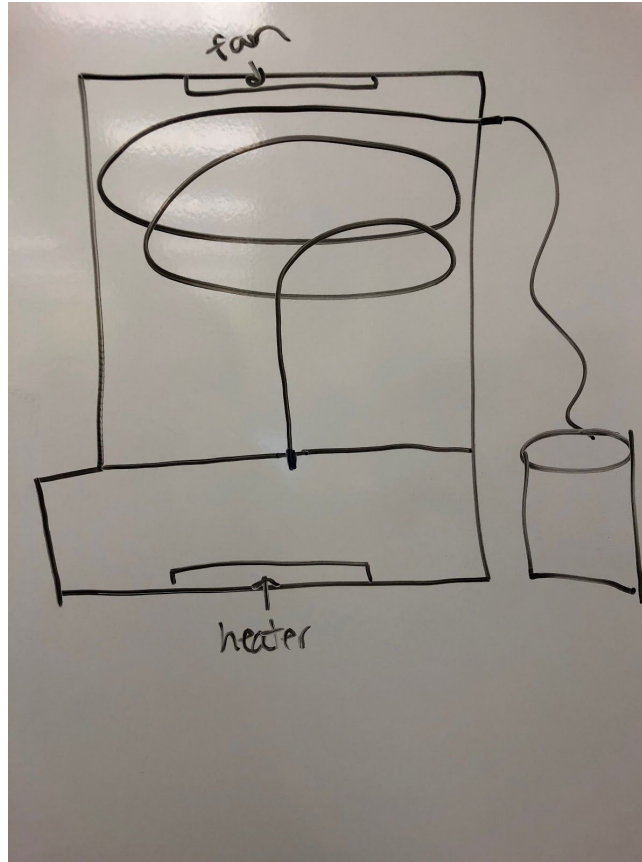


Figure 2: This image shows the general structure of the water filter and where the components are going to be placed. As shown, the water heater will be in the first chamber and the condenser coil and fan is in the second chamber.

Work Planned Over the Next Two Weeks:

Construction of the first chamber will begin once the plastic arrives. The first chamber is a small flat box, but the heater must be held in place so it does not move throughout the chamber. The heater will be mounted and an opening in the plastic will be created to allow water to enter the chamber but will be sealable to prevent the water vapor from escaping. The heater must also be tested when the first chamber is built to ensure construction proceeded successfully and the

heater is compatible with the first chamber environment. Once the first chamber is complete, plastic will be put over the chamber as a barrier between the two chambers and the second chamber can be constructed on top of the first. Until the plastic arrives, additional research on the separate components, such as the solar panel, and the heater will occur.

Data and Results

No data or results at this time. No experimentation has occurred.

References

No references at this time.