Innovation Park Water- Progress Report VII

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Objectives: Start construction of the water filter, confirm design, and continue research on the heater.

Materials and Methods

Progress:

Suring the past two weeks, progress was made on solidifying the design of the water filter and the dimensions of the filter. In order to determine how much plastic was needed to create each chamber, the dimensions of the water purification device was drawn to scale. Already having the design and shape in mind and planned, Figure 1 shows the drawn to scale dimensions of the water filter without including the connection of the battery, charge controller, and solar panel to the heater in the first chamber. The design was slightly altered to accommodate the design of the condenser coil and how it functions. The initial design had the vapor moving up into the coil, and traveling upwards through it and having the water drip out. The condenser coil cannot function that way. The water vapor has to travel down through the coil and exit out of the bottom of the coil. The function of the coil and the inspiration for our new design is shown in Figure 2. Due to this, we cannot have a container out to the side any more for the filtered water to drain into. We decided to put a container, also made out of the plastic, on the bottom to allow the water to drip into. The user can then take this part off and pour the filtered water into a container of their own. With this, we are also going to put the wires for the heating component into an enclosed space right next to it, also made out of the plastic. Research was done on the heating component we currently have, and it was determined that we cannot use it.

The polycarbonate plastic arrived and we started the construction of the water filter. This consisted of determining the dimensions of the plastic needed for the second chamber so we could cut it, measuring the plastic, marking it, and then cutting it with a band saw. Figure 3 shows us using the band saw to cut the plastic. The pieces were cut with a height of 9” and a length of 12”. The plastic was not cut for the first chamber because we are not sure yet what the exact dimensions of that chamber will be.

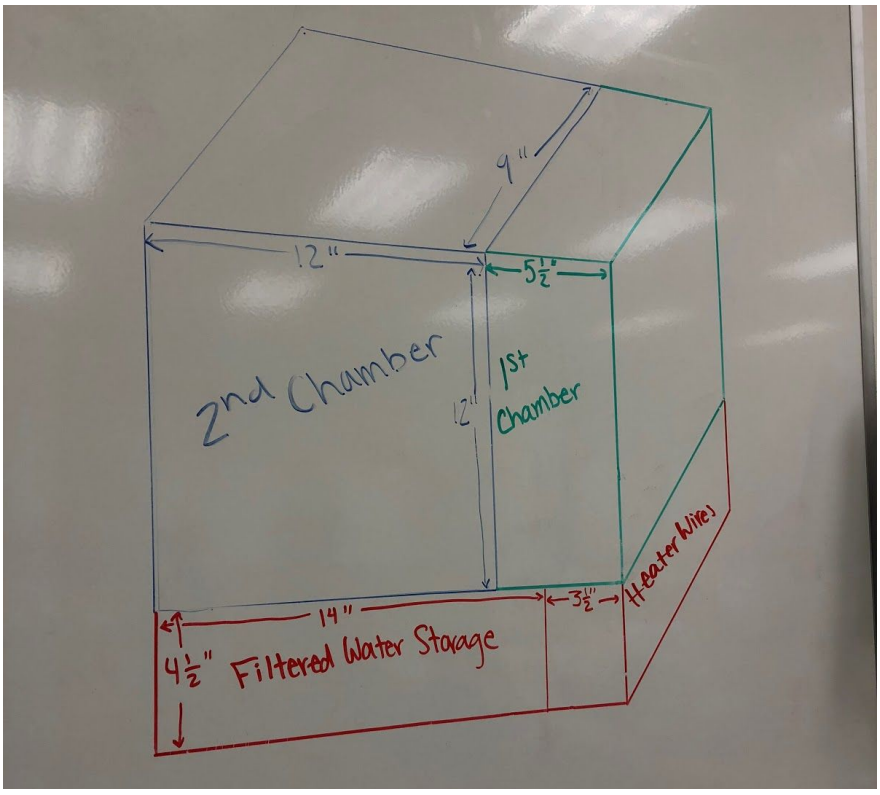

Figure 1: This image shows the sketch of the outer body for the filter and the approximate dimensions decided for it. It shows the two chambers, the “container” for the purified water, and the spot for the heater wires.

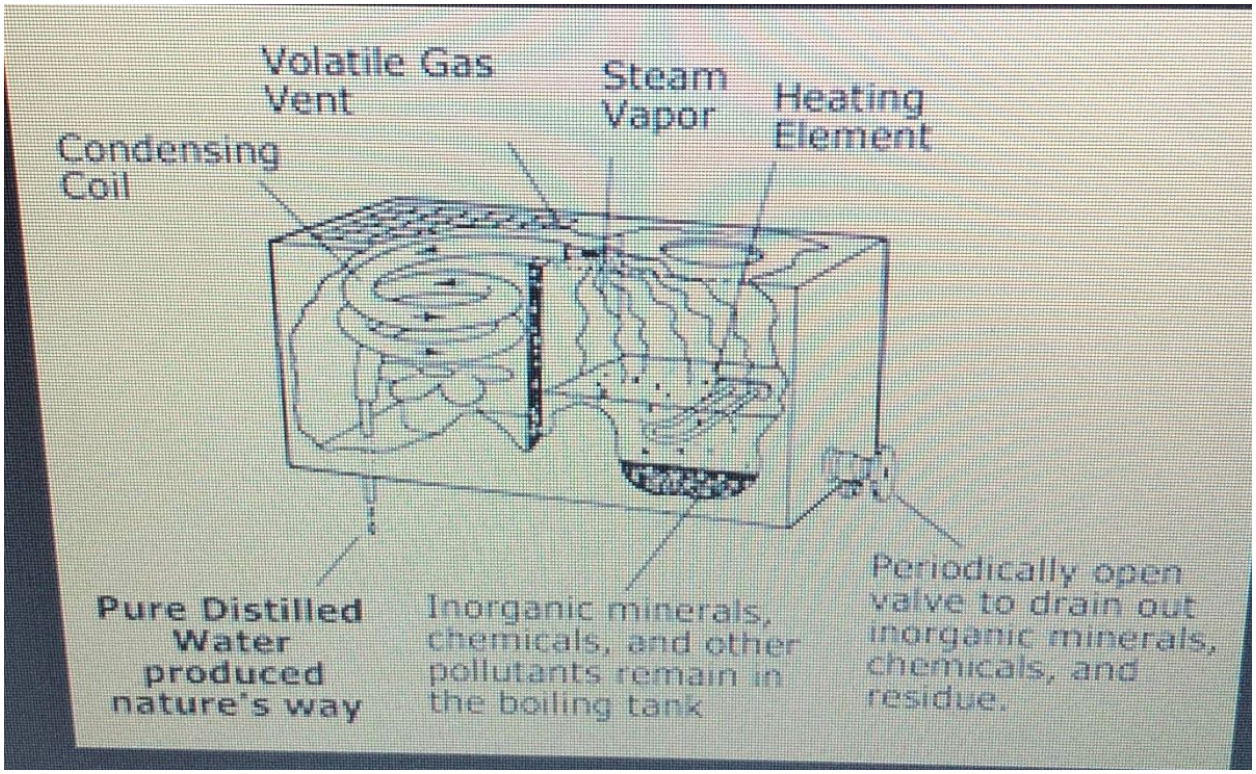

Figure 2: This image shows the inspiration for the design of the water filter. It shows where the condenser coil should be located in order to function, which was a major part of the remaking of the design.

Figure 3: This image shows the plastic being cut by the band saw. This was a first time experience of using a band saw, and it proved very helpful and simple for cutting the polycarbonate plastic.

Work Planned Over the Next Two Weeks:

Construction of the second chamber will continue along with finalizing the dimensions of the first chamber. A new heating element will be ordered or a new technique to heat up the water will be look into. There is a possible idea of lowering the pressure in the chamber so the boiling

point will go down. The other idea is using a heated coil to heat up the water instead of a heater from a coffee pot. These different idea will be considered, keeping in mind the budget and feasibility of each. Construction on the rest of the water filter will occur once the second and first chamber is completed.

Data and Results

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

References

No references at this time.