

Innovation Park Water- Progress Report IX

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Objectives: Finish construction of the entire device.

Materials and Methods

Progress:

Over the past weeks, the entire water purification device was completed. Due to the setbacks in finding a compatible water heater for the desired design, as well as the long cure time for the epoxy glue to dry, completed construction was delayed. The second chamber, completely constructed, is shown in Figure 1. The plastic pieces that are the sides of the chamber moved slightly while the epoxy was curing, causing the last plastic sheet to be off center by a couple millimeters. Since no water will be moving freely throughout the chamber, this does not pose a significant problem for the device and the little bit of open space will act as a space to cool the chamber down. The open space also does not pose a threat to the device by ways of water recontamination because the water is completely enclosed in the condenser coil, not being exposed to air in the second chamber. The latches were glued on the sides using epoxy putty instead of epoxy glue because the glue did not provide a necessary amount of contact to create a strong enough bond between the plastic and the metal latches. The other sides of the latches will be connected to the water storage container, but this will be added right before testing as it is not important when testing the individual chambers. The fan was also put into place using the epoxy putty; the fan will cool the condenser coil and second chamber to prevent overheating.

The plastic pieces for the first chamber were cut and the hole for the water heater was drilled into one of the pieces of the plastic. The hole for the water heater had to be as small as possible because the metal section of the heater needs to be completely submerged in water in order to work but the plastic cannot be submerged because it could melt and contaminate the water. In order to further prevent the heat from damaging the water heater, high temperature

resistant epoxy putty will surround the place where the heater is inserted, so that the adhesive will prevent the heater from moving and the plastic on the outside of the chamber from melting. The pieces for the first chamber were not glued together because the water heater requires that none of the plastic body be submerged in the water. The initial design did not take this into account, and by faulty design of the water heater, created another setback for constructing the first chamber. The plastic piece preventing this will be removed, either by a saw or dremel. The new design has the water heater being inserted from the top of the chamber instead of the side to prevent any part of the plastic body from touching the water.

Pictures of progress were continually updated to the website, showing completed chambers and construction of the chambers.



Figure 1: This image shows the completed second chamber. The fan at the top will be used to cool the inside of the chamber down as the condenser coil lowers the temperature of the water vapor. The tops of the latches can be seen on the sides of the chamber, towards the bottom; these latches will be used to secure the water storage container securely in place.

Work planned over the next two weeks:

Within the next two weeks, the first chamber will be completed, and testing of the first chamber individually, second chamber individually, and two chambers together will be tested.

These tests are preliminary and will be used only to ensure that the two chambers work

separately and together. Once these tests are completed smoothly, testing of the entire device will occur. The website will continue to be updated with pictures and data of the chambers.

Data and Results

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

References

No references at this time.