

mds279

Melissa Shinbein's Individual Contribution Page

Spring 2014 Final Contributions

As the semester comes to a close, we are working on putting together the final pieces to the 55 gallon drum apparatus. We have all the components with a chemical doser fully designed. Implementation will happen in the next week. Testing is expected to happen over the summer as we continue to improve the foam filter. Good luck to future foam teams!

Spring 2014 Mid-Semester Contributions

As this semester picks up, the team continue to update the foam filtration unit. Current tasks include: designing a side-valve that can go into the 55gallon drum without creating a path of least resistance for water to flow through, investigating materials for the compression unit that will not rust, designing an efficient compression unit that implements pulleys, and finding more suitable materials to construct the plunger such as stainless steel wire mesh or geomembranes. Once all the components are assembled, the whole unit will be tested in lab for varying turbidities with a fully designed LFOM and flow controller. The goal is to create an easy to assemble and clean unit.

Spring 2014 Contributions

This semester our main goal is to redesign the 55-gallon drum unit that went to Honduras. While the unit did work successfully, the cleaning procedure was extremely over-designed. A new cleaning technique that is both compact and easy to use will be designed and implemented this semester. Additionally, the unit should have components such as the LFOM, dose controller, and drainage pipes that are compact and can be easily set-up.

Fall 2013 Final Contributions

Since the middle of semester, the [Foam Filtration](#) team has made great strides towards redesigning our apparatus. This new design involves all the foam being in a single 55-gallon drum, complete with chemical dosing, LFOM, improved cleaning mechanisms, and chlorination. The drum and all additional components will be mounted on a wooden frame that will be constructed in Honduras. When members of the team, including myself, arrive in Honduras we will put together the whole apparatus and demonstrate its effectiveness. Additionally, improved cleaning mechanisms involve a concrete slab attached to a hoist. This slab will compress the foam, since the foam is now at approximately 23inches in diameter a simple plunger will no longer exert enough force to compress the foam. To remove the dirty water that pools on top of the foam, we will use flexible tubing to act as a siphon. Dirty water at the bottom will simply flow out of a drain pipe. The goal for these last few weeks of prep is to put these components together as pieces arrive to have the system ready to be mounted once we arrive in Honduras this upcoming January.

Next semester, we will work to improve any components that prove troublesome whether in Honduras or en route. Also, after submitting an EPA P3 competition proposal for an emergency design, we will follow up on any further research required by the P3 and on making said design by having the components more "compact". This entails having all pieces fit inside the drum for easy transport and set up in emergency settings.

Fall 2013 Mid-Semester Contributions

So far this semester, the [Foam Filtration](#) team has worked towards completing our task list. First, we began by testing the lifetime of the foam in order to see how long it would take the foam to break apart. During the testing, we discovered that the apparatus itself was extremely unstable. While the foam remained completely intact, the PVC structure fell apart, releasing all the water and subsequently ending the test. To counter this, we are in a phase of redesigning a more stable structure. Additionally, we ordered round foam that would fit better into our PVC pipe structure, thereby forming a tighter seal. Once this seal is obtained, we will begin testing the compression and decompression capabilities of the foam. Currently, the foam is re-expanded by pulling a string after each cleaning compression, a very tedious task. If the foam can naturally re-expand after compression, this would significantly cut down on the manual labor needed to maintain the filter columns.

Fall 2013 Contributions Page

After meeting with Monroe and having a few initial meetings with the team, the [Foam Filtration](#) team is starting to develop a task list for the semester. Currently, the rough outline of such is comprised of: finalizing a stable design which can be easily cleaned and drained, discerning the necessary size of the foam filtration plant at different flow rates, adding a chemical doser for the coagulant and chlorine, and determining background information such as the foam lifetime or performance analysis at different turbidities. These tasks will hopefully be accomplished by the end of the semester so deliverables can be sent to Honduras in the upcoming winter.

Fall 2010 End of the Semester Contributions

As the semester draws to a close, the [Foam Filtration](#) team continues to finalize the EPA P3 entry. This paper will be submitted before the end of the semester after undergoing several stages of editing. Meanwhile, the apparatus has finally been completed and experimentation is well underway. Currently, the column is being layered with foam of varying porosity.

Next semester, we hope to continue these experiments of varying pore-size, and eventually progress to finding the maximum turbidity the apparatus can handle, pressure at failure, and other such experiments to help make foam filtration a point-of-use filter used world-wide!

Fall 2010 Mid-Semester Contributions

This semester I am continuing to work on the [Foam Filtration](#) team. Currently, I am focusing on creating the exit channel and chlorination portion of the filtration unit for the upcoming EPA P3 competition. This portion of the filtration unit will be responsible for chlorinating water after filtration by using rapid mix. The rapid mix level of the apparatus will either be retrofit into already present distribution systems or used to create a new distribution/storage tank. Meanwhile, the actual apparatus is still undergoing updates as parts continue to arrive. Hopefully experimentation will begin in upcoming weeks.

Summer 2010 Contributions

On the Foam Filtration Team with a fairly high level of competence on: apparatus operations, running experiments, contributing to the Reflection Report, and attempting to get research published.

Content Created

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There are no pages at the moment.
