

Foam Filter Team

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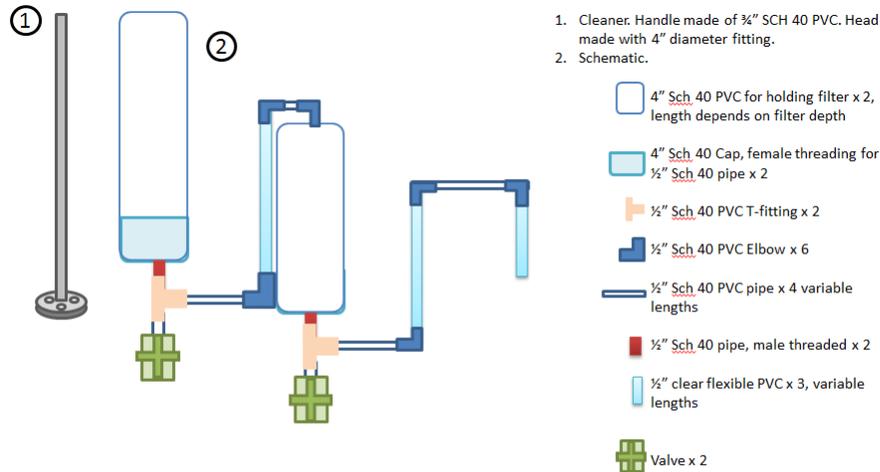
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Challenges And Progress

The Foam Filtration team has begun the fabrication process of our project. Since our last progress report, we have cut all the foam pieces for the foam filter, cut the piping, and begun the assembly of our filter. We have begun calculating the necessary heights for the linear dosing system and LFOM hole quantity and sizes with the help of our team advisor, Casey Garland using previously made MathCad files.

For the cutting, we first ordered 2 roughing filters (30 ppi) and 1 refining filter (90 ppi). These foam pieces have a given height of 14.75 inches (37.5 cm). These pieces were cut in the shop as close to a 4 inch (10.16 cm) circular diameter as possible. Though it is difficult to cut the square pieces of foam into a circle, continue to remove small segments on the edges until the piece looks round. When finished cutting the foam, insert the foam within the PVC pipes to be sure that the pieces fit without being too loose. Should the foam pieces be too small, the filtration will be compromised due to water bypassing the foam. Once the filters have been cut into their circular shape, drill a hole horizontally across the top of the filters. This hole should be relatively small in diameter approximately 0.5 inches (1.27 cm). The cutting of this hole resembles that of an apple corer. This hole will be used to thread the string through for cleaning and measuring purposes.

When cutting the PVC pipes, you need two segments; one for the roughing filters, one for the refining filter. The roughing pipe must be at least the height of the two roughing filters. The current pipe is approximately 56 inches (142.25 cm). The refining pipe is approximately 31 inches (78.75 cm). These heights are estimated, as final heights have not been decided. These pipes are connected to each other via 0.5 inch schedule 40 PVC pipe. Below is a schematic of the connections, piping and joints.



We have decided to go with opaque, white PVC pipes instead of clear PVC because of cost and also availability in the local environments. We have also gone with matching T's and elbows.

We also are looking into design a new stand that is not metal, but rather wood to be easily acquired in country. We have begun designing a stand using AutoCad software and hand sketches that are simple, easy to construct, compact and durable. We had planned on originally displaying the assembled foam filter using the metal stand, however it has been put to use by other teams. In terms of materials, consult the shop representatives for strength recommendations.

LFOM calculations were performed using previously programmed MathCad files stored on the AguaClara drive. Implementing a linear dosing system will allow the foam filter to operate more independently and reliably than the previous dosing system.

Goals

Our goals for the next two weeks include finishing the assembly and operation of the foam filter. The filter, although pieces can be assembled, is not operational yet. We are planning on designing a new more practical stand, constructed of wood. Once this stand is designed and constructed, the filter will be put together. We are hoping to finish the design of the linear dosing system on MathCad and have the pieces cut in the near future. The goal is to have a fully functioning foam filtration system by the end of the semester.