

jg834

Jenny Guan's Individual Contribution Page

2012 Fall

For the Fall 2012 semester, I worked with [user-734af](#) to improve the foam filter system by making it easier to clean, more portable, more user friendly, and more efficient.

We have managed to get the system running without electricity. This is done by placing the water tank above the foam filtration system and using the difference in elevation and head losses to meet the required flow.

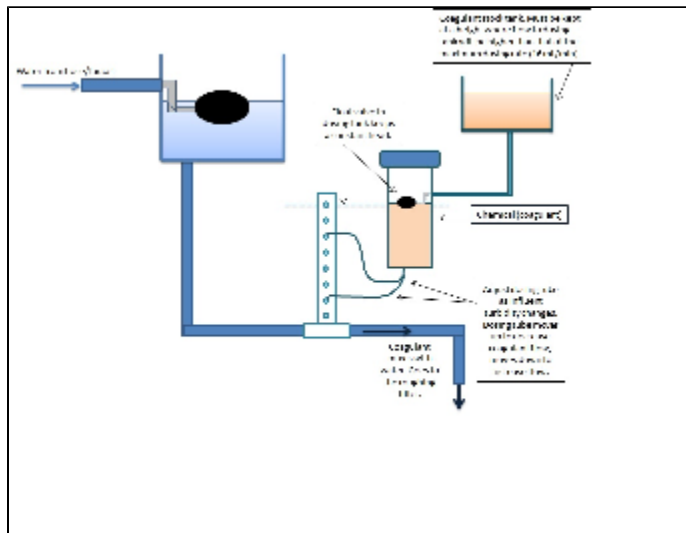
A chemical dosing system designed by AguaClara researchers in the past was used as a basis for the chemical dosing systems for this set up. The flow of chemical (coagulant or chlorine) to the system is driven by head loss.

A Secchi Disk was built as a visual indicator to determine when the filters need to be cleaned.

A brief and user-friendly operator's manual in Spanish has been created for use in Honduras.

Chemical Doser

Designs for a coagulant doser have been drawn out in the figure below (click for larger image).



The amount of coagulant needed is based upon the amount of NTU's (Net Turbidity Units) in the influent. The coagulant flow is controlled through varying head loss using the dosing tube. The chlorine doser works the same way the coagulant doser does, but adds chlorine to the effluent before distribution of the treated water.

Visual Indicator

We have constructed a secchi disk as a form of a visual indicator to tell when the filter needs to be cleaned. When the roughing filter effluent is 20 NTU, the secchi disk becomes cloudy when it is placed on top of the finishing filter. Thus the secchi disk is a good way to indicate an increase in NTUs but more experiments need to be run with varying depths and turbidities.

Spring 2013

For the Spring 2013 semester I worked with [Monica Kuroki](#) and [user-14021](#) on redesigning and rebuilding the foam filtration system. The main task at hand was coming up with a design using materials that could be readily obtained in Honduras. The old foam filtration system was held in place using a 8020 steel stand while the foam filters were held within clear PVC piping. Unfortunately, 8020 steel and clear PVC piping are unavailable in Honduras.

Foam Filters

The foam filter casing is now made of opaque white PVC piping. This will make cleaning the system difficult on the account that one cannot see where to decompress the filter once the cleaning has been done. As a result, the string used to decompress the filter after cleaning, by pulling it up, was marked at an appropriate position. When the marked portion of the string reached the outer portion of the filter casing, that is a sign that the filter has been decompressed and is ready to operate again.

Stand

The stand is constructed out of 1-1/2" diameter Sch 40 PVC piping. This material is cost effective, readily available in country and strong. The stand is held together by 1-1/2" tee fittings.

LFOM

The foam filtration team this semester designed a new LFOM that would fit inside a larger reservoir tank. The larger reservoir tank is necessary because it needs to be able to fit a linear chemical doser for coagulant dosing. The old LFOM reservoir tank was too small for such a task. As a result, MatchCAD functions developed by AguaClara Teams from the past were used to design a new LFOM that would fit in this new reservoir tank.