

# Demo Plant

March 5, 2014

Location: ???

Skills: fabrication and design

Number of students: 3

The demonstration plant is an excellent resource that makes it easy for students to learn how the AguaClara technologies work. The current demonstration plant has all of the unit processes of an AguaClara plant. However, the chemical dose controller doesn't work well and the plant flow rate and hydraulics are difficult to manage. The plant lacks documentation for stock tank preparation and target flow rates. Flow measurement should ideally be built into the hydraulic design. The flocculator is particularly difficult to use because it overflows easily. An emergency overflow should be added so that it doesn't spill on the table. All of the hydraulics should be evaluated and leak/overflow modes should be eliminated.

It is possible that a half scale dose controller could be used for this plant. The frame could also be fabricated by the same fabricator who makes the dose controllers. The mounting system for the various processes needs to be made more elegant. The mounting system for the tanks doesn't work and has resulted in several fractures. New tanks and a new mounting system will be needed

- Easy to use
- Doesn't overflow
- Easier to set up
- Flow rates are labeled on stock tanks tanks are made of material that isn't brittle
- Tanks are fastened using a slip on system that doesn't require any tools to assemble
- Tank mounting is secure and doesn't stress or deform the tank material
- Flocculator has more freeboard (to avoid overflow)

- Dose Controller uses manufactured half scale lever and slider that is labeled and beautiful
- Startup procedures are easy to implement and include a system to easily fill each unit process with water
- Reserve coagulant is kept in a closed bottle (not a beaker) that is labeled with the concentration and preparation method.
- Larger volume container is used for stock tanks so that runtime without intervention is at least 15 minutes and if possible is 30 minutes.
- Straight dosing tubes are used for both plant flow and coagulant flow (use the latest dose controller technology)
- raw water preparation is in a tank that is sufficient volume for 30 minutes or 1 hour of runtime
- coagulant and raw water constant head tanks are in the new horizontal orientation
- all components slide onto the frame in an easy to insert system that provides precise elevation control
- Frame is designed to be easily folded for transport