

CDC Summer 2009 Challenges

Challenges for Summer 2009

Subteam Leader: Steve Mitchell

Number of team members needed: 4

Important team member skills:

- MathCAD
- AutoCAD
- Fluid Dynamics

Challenges

Chemical Dose Controller

- Work with the team Honduras to evaluate the current Linear CDCs at Tamara and Cuatro Comunidades.
- Need to make the nonlinear MathCAD file more robust.
 - Currently input plant flow rate and actual plant flow rate are not the same in the algorithm.
 - Extend the range of the design below 6000 L/min. The CDC works best at high chemical flow rates with a wide tube. Is there a way to increase chemical flow rates for plant flows below 6000 L/min without overdosing alum? (e.g. decrease stock concentration- might create huge chemical stock tank however)
- Figure out how the non linear CDC will fit into the overall plant design.
- Design a higher density float for high plant flow rates.
 - Consider connecting two different tubing sizes to accommodate for the distance the flow control module and the stock tank.
- Run experiments to evaluate the materials being used i.e. flexibility of the tubing.
- Test the flow ranges with varying tube lengths.

Rapid Mixer

- Modify the rapid mix MathCAD so that the flocculator first section baffle spacing is no longer a constraint on the orifice collector channel width. In other words modify the code so that an aspect ratio (channel width/water depth) is specified rather a fixed depth.

Linear Chemical Dose Controller Paper

- Write and edit paper documenting all the research into the Linear Chemical Dose Controller. The manuscript needs to be suitable for publication. All drafts are attached to the Wiki.
- Consult with Monroe regularly to ensure completion of manuscript by end of semester. Complete multiple drafts for review.
- Perform experiments to collect any data that is missing from the paper.
- Repeat any experiments that may need to be run again to ensure accuracy.