

Jeff Will's Individual Contribution page

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"Semester" Contributions

Paragraph (really, just one please 😊) explaining contributions to date. Provide links to pages you worked on. Ex. "I re-wrote the [main chemical doser page](#) so that it is up-to-date to reflect the new research we are conducting."

Fall 2009 Contributions

May and I have been working on developing MathCad code to determine the port drain size needed through the bottom baffles in a vertical flocculator so that it may drain in a desired amount of time. We used an already-existing MatchCAD file that solved for the time numerically given a port size. In an attempt to find an analytical solution, we graphed several parameters versus time to see if there was a clear relationship. This gave the result that the drain time is roughly linear with respect to the number of successive ports, and negligibly nonlinear in the range of ports we would use in a real plant, as long as the ports were smaller than the valve. Based on this, we chose to set the port size equal to the valve size. We wrote a new function in the MathCAD file to iterate through the allowable valve sizes and use the time function to determine the drain time. If the time function returned a drain time within 110% of the user's desired drain time, this valve size would be used. The extra 10% allowance is to find the most economical answer, balancing construction costs with cleaning time.

In addition to the AutoCAD coding for the vertical flocculator ports, we made the code more efficient for the other scripts in the floctank drawing program so the program would execute faster and save us time in debugging our own code. This included the addition of union functions to subtract groups of objects simultaneously, removing iterations that intended to calculate existing variables, and changing how the baffles were drawn from using the lamella program to the simple box function.

The [floctankbaffleportscript](#) draws ports on alternating sides of the lower baffles so that water does not have a straight-line path through the tank and preventing proper flocculation. The efficiency of this function was improved by unioning the baffles as well as the ports to necessitate a single subtract rather than one for each port.

The AutoCAD scripts on the wiki were out of date and too technical for anyone not familiar with MathCAD. We updated these scripts to be easier to understand and factually consistent with the changes that had been made to the scripts in addition to adding pictures.

Once our work on the vertical flocculator ports was complete, we helped Julie Pierce with the horizontal flocculator design and AutoCAD scripts. We successfully altered the code so that the flocculator would draw as a horizontal flocculator using the calculations Julie had already written. Many of the vertical variables could be reused, but some needed to be made into arrays. We wrote an if statement to solve the problem of the baffles drawing incorrectly if the number of channels in the flocculator was even. The code to decide between horizontal and vertical flocculators still needs to be implemented before beta testing.

Pages Created

[Floctankbafflescript](#)

[Flocchannelslotscript](#)

[Floctankbaffleportscript](#)

Content created by Anonymous

There are no pages at the moment.
