

ad476

Annie Ding's Individual Contribution Page

Fall 2011 Contributions

I worked on two different design challenges in the Fall 2011 semester. The first was to design and write the code for a floc skimmer, which is a length of PVC pipe in each bay of the sedimentation tank that is used to remove any floating flocs that escaped the floc blanket and reached the surface of the water. The second task was to find and implement an automated method to allow anyone who requests a plant design to assign materials in the AutoCAD drawing, which would make it easier for someone to visualize the proposed design as it would look in the real world. The final presentation of both of these challenges can be found [here](#), along with pictures.

Spring 2013 Contributions

In the Spring 2013 semester, I continued the work of [Kira Gidron](#) from the Fall 2012 semester on the Materials List. I completed code designed to separate a PipeMatrix (which will come from changes in code to all pipe-drawing functions) into smaller matrices, each of which contains only rows with the same ND and EN values. PipeMatrix will consist of rows that each represent different pipes used to construct a requested plant design; each row contains a pipe's length, nominal diameter (ND), pipe schedule/specification (EN) and number of times it is arrayed. I also started code that will use these smaller matrices to find out the minimum number of lances (6.1 meter lengths of pipes sold in Honduras) needed to construct any given plant design. This section of code has not yet been completed.

Spring 2014 Contributions

In the Spring 2014 semester, I continued my work on the Materials List design challenge that I worked on during the Spring 2013 semester. I completed the portion of the design related to coding the cutting optimization sorting algorithm, while my partner Meghan Furton completed the call functions in all the source code.

Fall 2014 Contributions

This semester, I worked on the [Ram Pump](#) team, helping them continue the work of previous teams in improving the ram pump design. Experimentation done over the course of the semester helped determine optimal configurations for the existing ram pump design. At the end of the semester, the team pioneered a completely new design of the ram pump, inverting the orientation of the waste valve to create a less space-intensive design that does not require a horizontal drive pipe or bulky air chamber. The design was tested in the Winter 2015 trip to Honduras, and it worked as well as the traditional design when tested in the Jesus de Otoro plant.

Spring 2015 Contributions

In the Spring 2015 semester, I worked on a newly formed subteam: [Grit Removal Innovative Technologies \(GRIT\)](#). The GRIT Team tackled the problem of grit (sand) build-up in the flocculator (observed in Agalteca and Marcala) when there is too much grit for the entrance tank to handle. Over the course of the semester, the team determined the most effective design for creating a new grit-removal design using plate settlers that will settle out the grit prior to flocculation process and sedimentation. The new design will replace the need for the large entrance tanks that are currently used to settle out large particles, greatly reducing construction costs and plan view area of the plant.