Distillery Bottling System

Western Carolina University
School of Engineering + Technology

Original Objectives

- We plan to make a system that can clean bottles using their current process using automation to make the process easier for one person to operate.
- Improve time of original operation
- Eliminate steps to speed up time
- Thoroughly clean bottles
- Fill and clean different sizes of bottles

Requirements

- Clean Bottles (✔)
- Flip Bottles (X)
- Speed up process (✔)
- Fill Bottles (✔)
- 24 second fill (X)
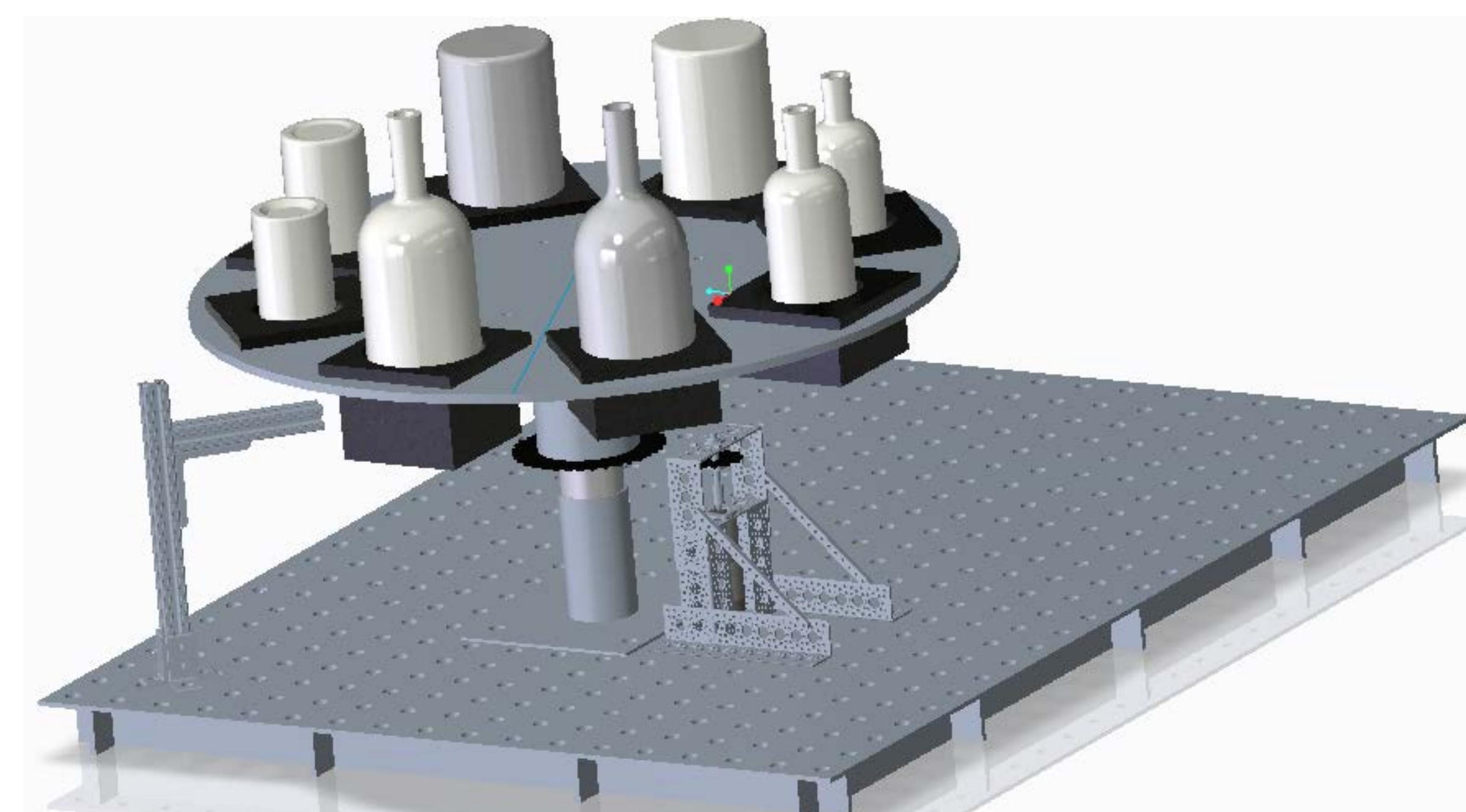- Drip dry (✔)
- Unload bottles (X)

Concepts

- All of our concepts were similar. At the beginning we knew we would need the table to be circular
- We decided on cut out inserts to change for the different bottles we were filling
- Our biggest concept difference was flipping the bottle a problem we ended up not solving and leaving for the next group

Problem Statement

We are seeking a solution to a problem that exists across the entire craft distilling industry. The issue is that there are no options that are a single stop solution to our packaging needs. Packaging systems are either very small in scale and have to use multiple different pieces of equipment to accomplish all of our needs. The other option would be very large in scale systems that are meant for national size brands and therefore impractical to use on a startup craft distillery scale both due to the size and expense. We are seeking to create a middle alternative.

Final Design/Results *

- The team approached the final design to fit the standards that Cultivated Cocktails were seeking. The team designed a product that could alcohol rinse, air dry, flip, and fill a bottle. Final concepts for this project consisted of the same deliverables that we established with the Sponsor when taking on this project. In the future, the sponsor plans to add some additional features to the product. These features include a bottle capper, a bottle cap sealer, and a labeler for the bottles. When all these processes have been completed, the team and sponsor would like to see an accumulation table added to the final outcome.
- Our main approach for our project was first, completed documentation in order to decide our approach to the project. Once that was established the team came out with a final design which you can see below. After the team was satisfied with the design, manufacturing begin. The plan for developing this project was to first, create the table. Following this the team decided to break down the requirements into categories and later integrating them into the table.

* On March 16, 2020 classes and labs were closed to students due to the COVID-19 Pandemic. Without access to fabrication and testing equipment, Objectives and Deliverables were modified accordingly.

Modified Objectives*

- Most of our objectives had to be modified dude to COVID-19
- We could no longer complete any hands-on tasks due to not being at the school
- A big objective going forward for us became documentation
- We needed to document the code we had already finished good enough that the next group could finish the task
- We also needed to document and have the CAD model be good enough the next group could finish the table we selected

Summary

- To conclude we were just beginning to assemble our final product.
- We had completed a CAD model of our final table and were going to begin construction before COVID-19.
- The Code to run our table was coming along and we were also close to completion on that.

Team & Acknowledgements

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