**Brewster:**

A small-scale automated brewing system for creating new beer recipes quickly, cheaply, and reliably.

- Reduce risk of creating new and unique beer recipes due to the high cost and time investment of current options.

**Objectives**

- Cut down the cost to test new recipes
- Reduce brew / production time
- Be size efficient and user friendly

**Stakeholders Include:**

- Micro & Craft Breweries
- Passionate Home Brewers

**Current solutions are:**

- Expensive
- Slow
- Meant for larger batches

Example: The Grainfather:

**Prototyping**

A process schematic determined the required components and connections.

A SOLIDWORKS assembly model helped with physical design.

**Hardware**

Arduino and relays control the 7 solenoid valves and peristaltic pump.

Fluid transfer is controlled by both the pump and CO2 pressure.

**Project Scope**

Brewster focuses on:

1. Fermentation
2. Filtration
3. Carbonation

These are the longest stages of a brew!

**Future Improvements**

Incorporate all brewing steps such as mashing, lautering and boiling grain to make Brewster and All-In-One beer system.

**Testing**

The three main questions we wanted to answer when testing Brewster were:

- How well does Brewster mimic a production system?
- Does Brewster provide sufficient control of brewing variables?
- Does Brewster allow for effective, iterative recipe development?

**Validation Test:**

Colored water experiment: Ensure the fluid is able to flow through the system and be outputted as expected from the tap.

**Recipe Comparison**

Compare data, such as pH, %Alc, and taste from Brewster to an original recipe.

**Wireless Connectivity**

Connect Brewster to a mobile app for control and data storage.

**Process Expansion**

Incorporate all brewing steps such as mashing, lautering and boiling grain to make Brewster and All-In-One beer system.