IP-EIGHTEEN

GNG1103 Specific Gravity Measuring Device

Problem Statement

To create a device that accurately measures the specific gravity of the wort for Beyond The Pale Brewing.

Approach

- Rate of Reading

- Compatibility and Cleanability

- Expandable Data Monitoring

Approach

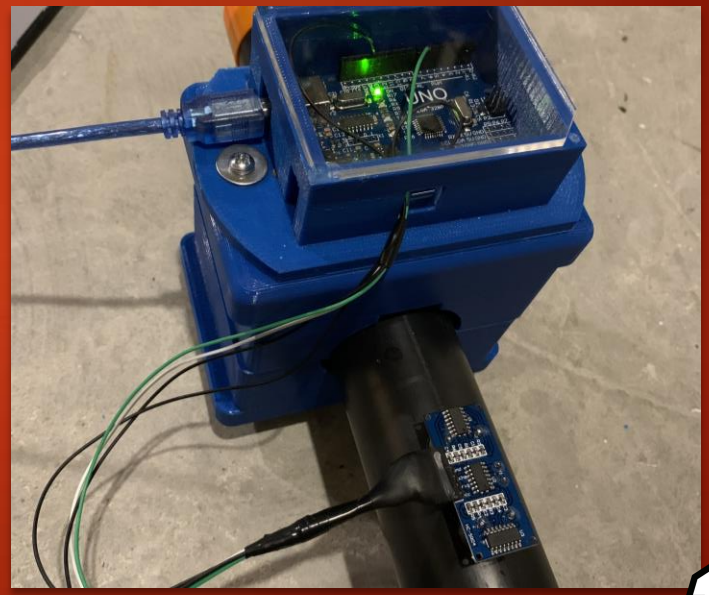
- Ultrasonic Sensor

- Inline

- Excel

Prototype

- Total Cost to Produce: $18.79
- Hand Removable Hardware
- Sensor Limitations
- Easily Separated Design for Ease of Maintenace and Cleaning



Demonstration

- EXPECTED SG OF WATER: **0.99 SG POINTS**
- EXPECTED SG OF OLIVE OIL: **0.80-0.92 SG POINTS**

Mathematical Computation

- Speed of sound = sqrt(Bulk Mod/Density)
- Isolate for Fluid Density
- Density of Fluid = Bulk Mod/(Speed of sound)^2
- Specific Gravity = Density of Fluid/Density of Water
- Bulk modulus varies depending on fluid and temp

Industry Implementation

- Materials
- Better sensors
- Pipe clamp
- Food grade

Backup demonstration

Questions