The goal of the Drifter 3.1 is to create a low-cost, replicable, water quality testing device. The project is made up of two interdisciplinary engineering teams (Manufacturing and Electrical). The Manufacturing team will be creating a waterproof housing that will protect and mount the inner electrical components and testing sensors. The Electrical Engineering team will complete the sensor wiring, power generation design and wiring, the electrical systems and all software coding for the system.

Drifter 3.1 will be the fourth iteration in the Drifter series. The goal of this project is designed so that high school students and hobbyists are able replicate for personal use. Drifter 2.12 was created by a high school team that made use of two sensors, temperature and salinity. Drifter 3.0 was created by a college level senior design team at Texas State University that made use of four sensors; pH, temperature, conductivity, and dissolved oxygen.

Drifter 3.1
- Easily reproducible
- Low center of gravity
- Centralized heavy components
- Printed from ABS (Acrylonitrile Butadiene Styrene)
  - Not biodegradable
  - Waterproof
  - Durable
- Pieces to be plastic welded together

Constraints
- Need to Print 3D on Printer size
  - 16.5” x 9.5” x 17”
- Solar Panel Size
  - 13.6” x 0.7” x 9.4”
  - 2.35 pounds
- Sensor Size
  - Height of pH sensor - 5”
- Centralized Battery
  - 4 pounds
  - 6” x 1.4” x 3.5”

Material Properties

<table>
<thead>
<tr>
<th>Specifications</th>
<th>ABS</th>
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<tbody>
<tr>
<td>Tensile Strength</td>
<td>6527 – 7252 psi</td>
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<tr>
<td>Flexural Modulus</td>
<td>305-1102 ksi</td>
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<tr>
<td>Density</td>
<td>0.033 lbs/in³</td>
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<tr>
<td>Biodegradable</td>
<td>No</td>
</tr>
<tr>
<td>Spool Cost</td>
<td>$20</td>
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<tr>
<td>(2.2 lbs, 0.07 in, Black)</td>
<td></td>
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</tbody>
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Future Work
- Full size fabrication
- Assembly with electrical
- Testing & modification
- Sponsor design review
- Assembly manual