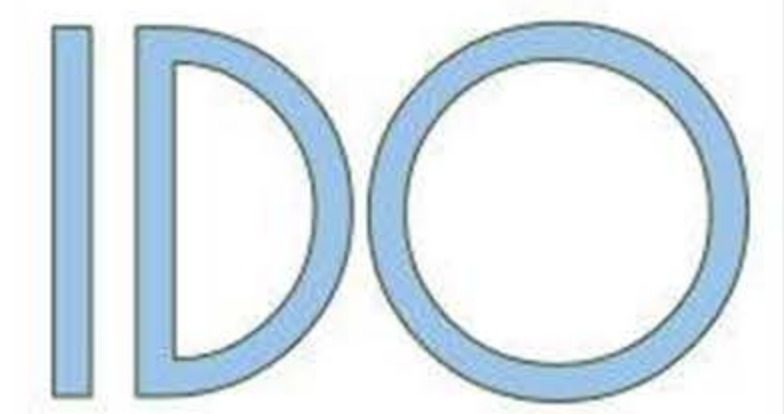


ME, ECE, BE Capstone Design Programs

ME, EE Capstone Team 17: Autonomous Coliform Tester

Jace Labat, Alec Rozas, Chris Arnold, Phillip Reed, Jeffrey Hastings



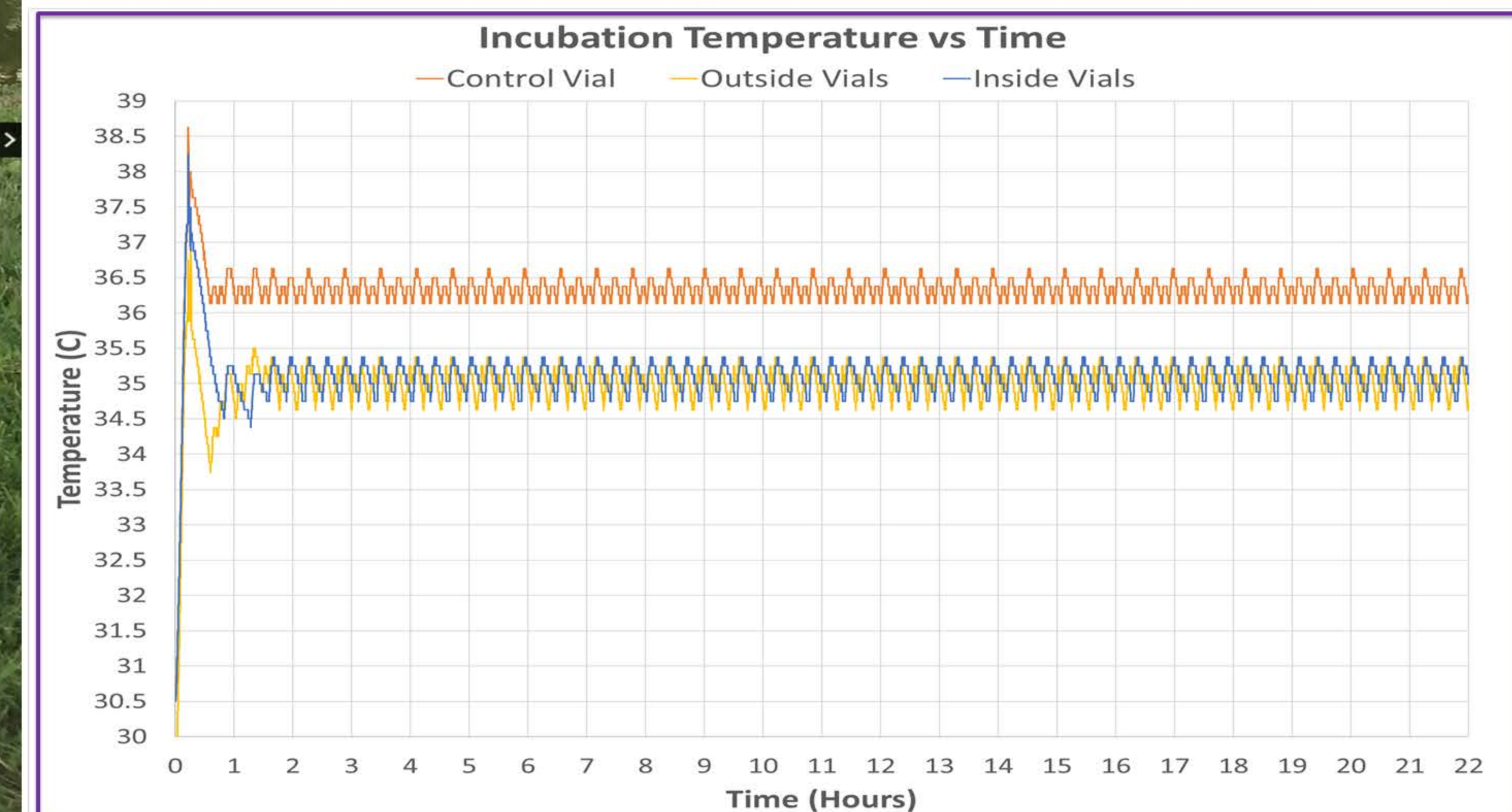
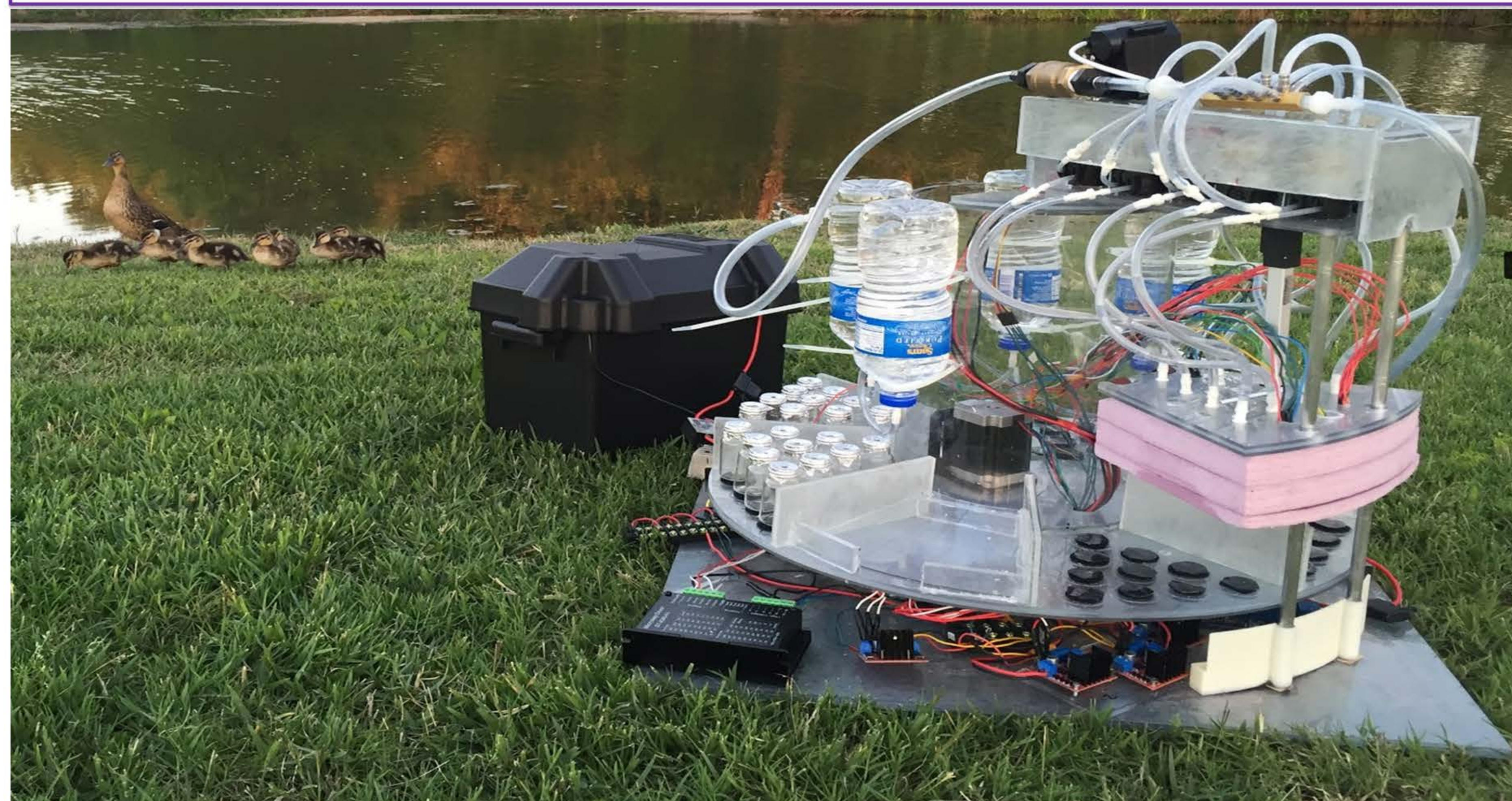
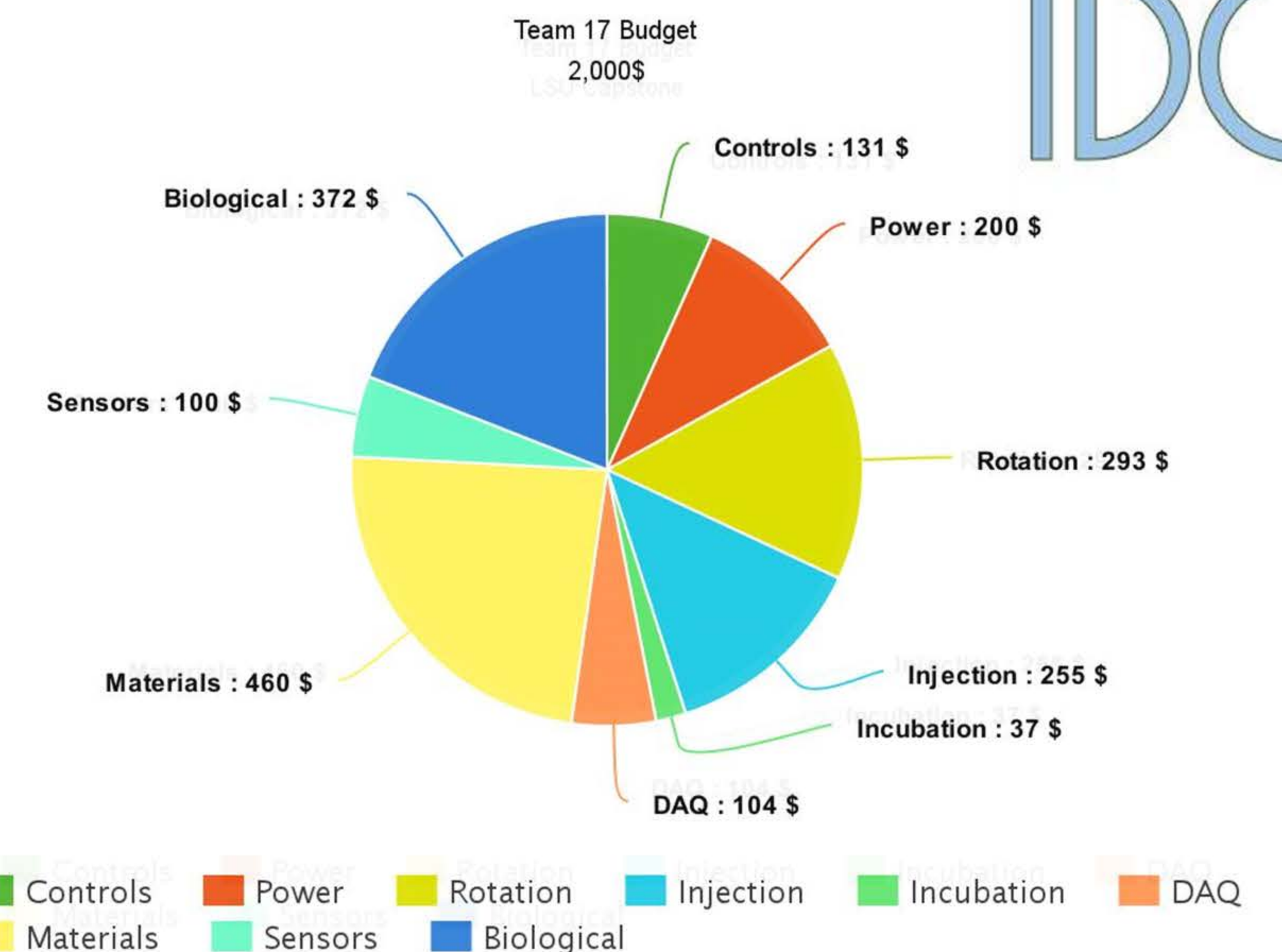
Test	Goal	Result
Battery Life	7 days	7 days
Cross contamination	0%	0%
Weight	<100 lbs	80 lbs
Pump Accuracy	± 0.1 ml	±0.1 ml
Incubation Accuracy	±0.5 °C	±0.75 °C

Design Objectives:

- Sample source water for the presence of Coliforms once a day.
- Operate autonomously for one week with no access to external power.

Background:

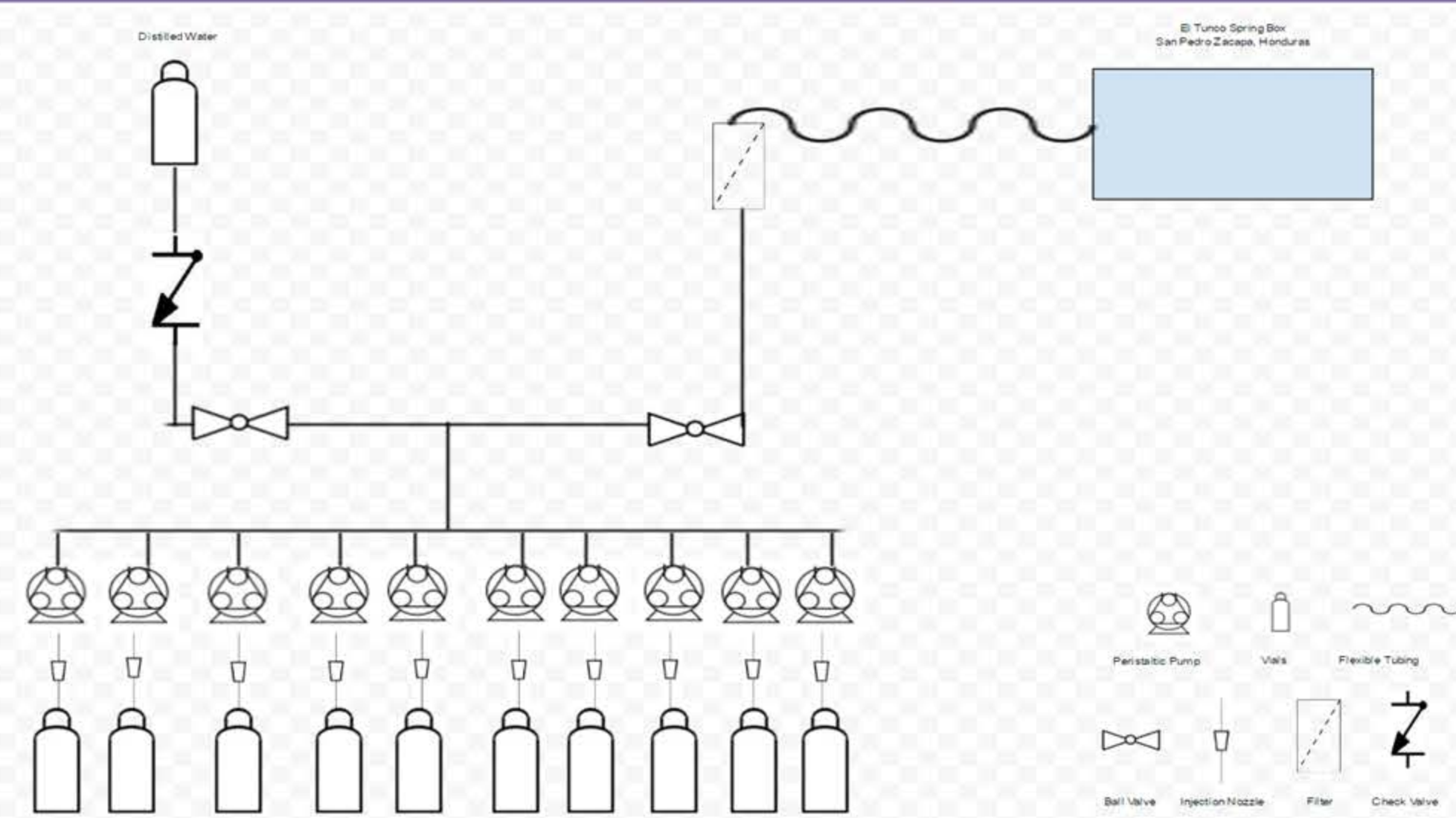
Device modeled after rural mountain community in San Pedro Zacapa, Honduras with a population of about 8,000 people. Their water is piped to the town from a spring box shown in Fig (). The water is contaminated with Total Coliform and E. Coli.



El Tunco Spring Box



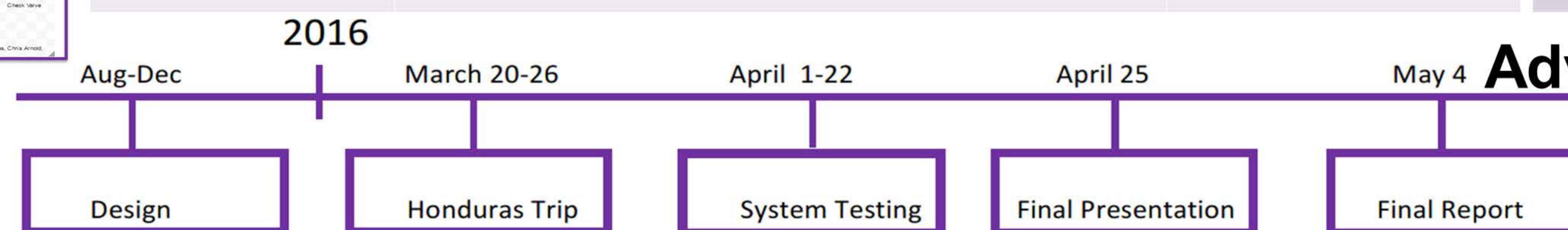
Pumping Diagram



	Colitag Most Probable Number Test	Direct Count
BEC Test		
Count	>27 Coliforms/100ml	~200 Coliforms/1ml
Flushing Test		
Count	0 Coliforms/100ml	0 Coliforms/1ml

Results	Data Acquisition Testing					
	Negative		Total Coliform Positive, E. Coli Negative		Total Coliform Positive, E. Coli Positive	
	LED	UV	LED	UV	LED	UV
Red	73-84	11-16	85-99	7-8	78-84	9-12
Green	135-157	13-17	119-158	11	93-108	13-31
Blue	115-149	26-52	24-37	3	17-22	4-11

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