

Thesis topic: DFM for water quality loggers



Figure 1 A water quality device that's production is not saleable

Description of the work:

Design for manufacturability¹ (also sometimes known as design for manufacturing or DFM) is the general engineering practice of designing products in such a way that they are easy to manufacture. In the proposed thesis topic, we are looking into applying the DFM principle in the design of water quality loggers.

The future of environmental sensing lays in distributed sensor arrays. In order to make the technologies developed in the Centre for Biorobotics scalable for field use, devices have to go through changes in the design in order to cut down in manufacturing costs, reduce assembly time and simplify handling. In this thesis, we are focusing on the assembly design and casing mechanics of water quality loggers, that need to be easy to manufacture but also easy to work with. The water quality logger's design should exploit market ready components and follow the FDM principle to reduce the price of single unit.

What do we expect from you?

- Interest in the topic and diligence
- Knowledge of using CAD software
- Would be beneficial if you have experience with product development
- Introduce several design possibilities with analysis on the price and production complexity
- Be ready to contact manufacturers and end users to come up with cost-effective design

¹ https://en.wikipedia.org/wiki/Design_for_manufacturability

What will you learn?

- Improve your skills in CAD
- Learn how to design devices for manufacturing
- Get yourself acquainted with team work

Why does it matter?

Centre for Biorobotics will deploy water quality loggers in the upcoming SIDS project (starting on 1. April 2019) on the island state of Grenada. The water quality loggers will help to monitor the safety of the fresh water and let government institutions to take adequate measures and also inform public if the water for example becomes undrinkable.

Keywords: water quality, environmental sensing

Contact: asko.ristolainen@taltech.ee, jeffrey.tuhtan@taltech.ee