



2nd version of an open source and low-tech CTD

Type of the project

Semester project

Laboratory

Smart Environmental Sensing in Extreme Environnements – SENSE

Professor

Professor Jérôme Chappelaz

Supervisor

Professor Jérôme Chappelaz

Contact person at Sailowtech

Alexandre Tellier, Bénédicte Lunven

Student

To be determined

Context

Sailowtech is an association and a MAKE project that aims to raise awareness of environmental issues, especially those related to aquatic environments. It promotes frugal and citizen field science, open source science and a low-tech approach. To achieve this, Sailowtech organises scientific sailing expeditions in lakes, seas and oceans to discover field science, test protocols and devices built by students during the semester.

One of the current projects is the construction of a CTD (Conductivity Temperature Depth) probe, which measures the electrical conductivity, temperature and depth of water. This instrument is used as the basis for all oceanographic research and provides important metadata. Our probe is designed to be low-tech, open source, sustainable and useful.

Description of the project

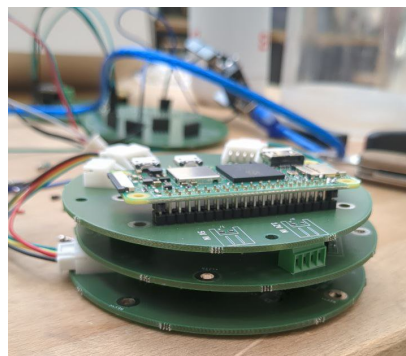
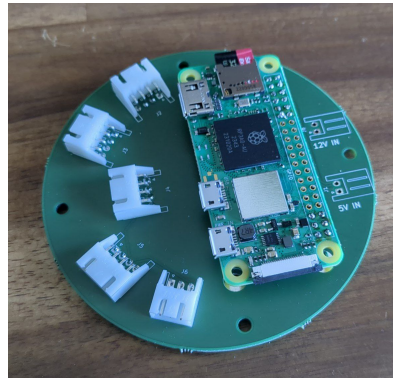
This project is recommended for students with a background in electronics and code. He/she will be supervised by the student who made the probe, but a good independence is necessary.

The goal of this project is to improve the CTD built by Sailowtech to make a V2. Here are the different tracks of the improvements :

- Improve the assembly system the CTD to facilitate its maintenance and increase its robustness.
- Correct the faults of the power system changing the battery cells, by developing a battery charger for charging and adding a state feedback of the battery.
- Add a wired waterproof in addition to the wireless link to retrieve the acquired data more easily.

Overview of the CTD :

Structure and PCBs:



Indicative calendar

TBD with the student

Deliverables

1. An assessment of the state-of-the-art of CTD.
2. A functioning CTD that can be used on a future Sailowtech cruise.
3. A written report presenting the results and work accomplished during the project.
4. An oral presentation at the end and in the middle of the semester to present the results of the project.
5. A document explaining the changes made to the device to make it reproducible .



Documentation

As a starting point, you can find the documentation to our present CTD version :
<https://github.com/Sailowtech/Sailowtech-CTD/>

Planned interaction with Sailowtech

The objective of this project is to develop a device that can be used during a Sailowtech cruise or instruments tests campaign. Consequently, there will be several meetings with Sailowtech (approximately three or four per semester, or as required) to monitor progress. Furthermore, the relevant technical staff at Sailowtech will be available for advice and assistance.

Finally, you will be counted as a member of Sailowtech, and will therefore be able to take part in the various activities and potentially test the device during one of our expeditions.

Contact

Bénédicte Lunven/ Alexandre Tellier – vp.science@sailowtech.ch