



# Water lift system

## 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

Shan Yao, Arthur Tabary

## Student

To be determined

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## Context

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

Many of the experiments we carry out at Sailowtech require water to be brought on board the sailboat for subsequent analysis, for example to investigate plankton, determine the concentration of dissolved gases or characterize the microplastics contained in the water. Sailowtech does not currently have a water pumping system.

## Description of the project

The idea behind the project is to design a water pumping system that allows water to be taken continuously, at a fixed depth, over a period of time. The device will have to be as portable and low-tech as possible, so that it can be taken on board, used and repaired aboard a sailboat.

## Deliverables

At the end of the project, the student will be able to deliver the following content :

- A water pumping device,
- An instruction manual of the device,
- A report (including a recap the differents steps, a “tutorial” of the device, the different scenarios of improvement and explanation of the one we choose, personnal experience)

## Documentation



## Main Tasks

- Establishment of a state of the art of the initial situation,
- Define a project schedule for the semester,
- Establishment of the list of material and the corresponding budget,
- Prototyping of a water pump,
- Establishment of a state of the art of the potential improvements of the device.

## Planned interaction with Sailowtech

The aim of this project is to fabricate a device that can be used on a Sailowtech cruise. Consequently, there will be several meetings with Sailowtech (about 3/4 in the semester) to follow the progress of the project and to assess additional requirements for remote measurement (e.g. maximum power the pump can use, pumping depth, etc...). In addition, 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

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