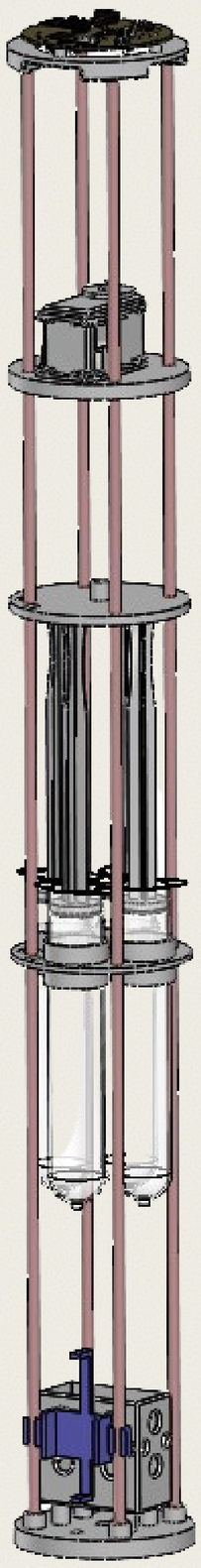
non-ROV
Design Document

Introduction

Our float is **simple** and **functional**. As shown in the *image 1*, each piece is mounted onto a removable structure which can be extracted as a whole; this allows us to fasten or replace any device by simply unscrewing the bottom lid.



1. float's internal view

Floating Engine

The device is divided in **two areas**. The upper area is hermetically isolated and contains all the electronic and mechanical components, while the lower one exchanges volumes of fluid with the external environment. The sack inflates and deflates, using the fluid coming from a tube that connects the upper and lower area.

Once the fluid is pushed inside the sack, it resides inside **four syringes** located in the hermetically closed zone. The syringes are set in motion by an actuator powered by a pack of batteries allocated at the bottom of the float's upper area.

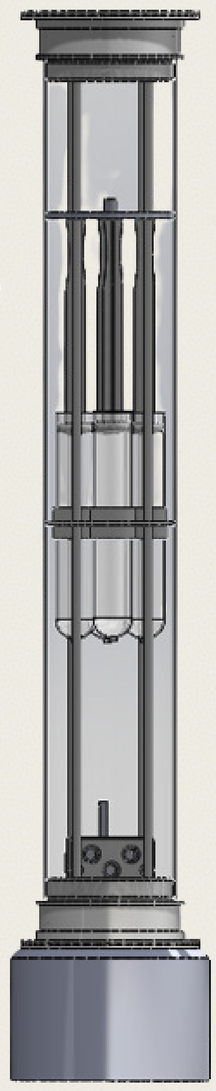
Electronics

The electronic system is managed by a **board** connected to the battery pack (8xAA batteries that supply 12V), to the **actuator** and to the **photocell**. The float receives a signal from the board to initialize the descent. The board sets in motion the actuator that moves the syringes that suck in the water contained in the initially inflated sack. Once the float gets close to the sea bed, the photocell sends a signal to the board which, thanks to the actuator, activates the syringes again.

The **three power-consuming devices** inside the float - the motor, the board and the photocell - are powered by a **12V battery pack**.

12V are converted to 3.3V and 5V for the internal logic. For the data transmission we used an ESP-01 that creates a WiFi access point where the Control Station can connect to, receive data and send commands.

On the bottom layer there is a **Real-Time Clock** (PCF8523) used for getting the UTC time and date, supplied by 5V.



2. float's complete assembly