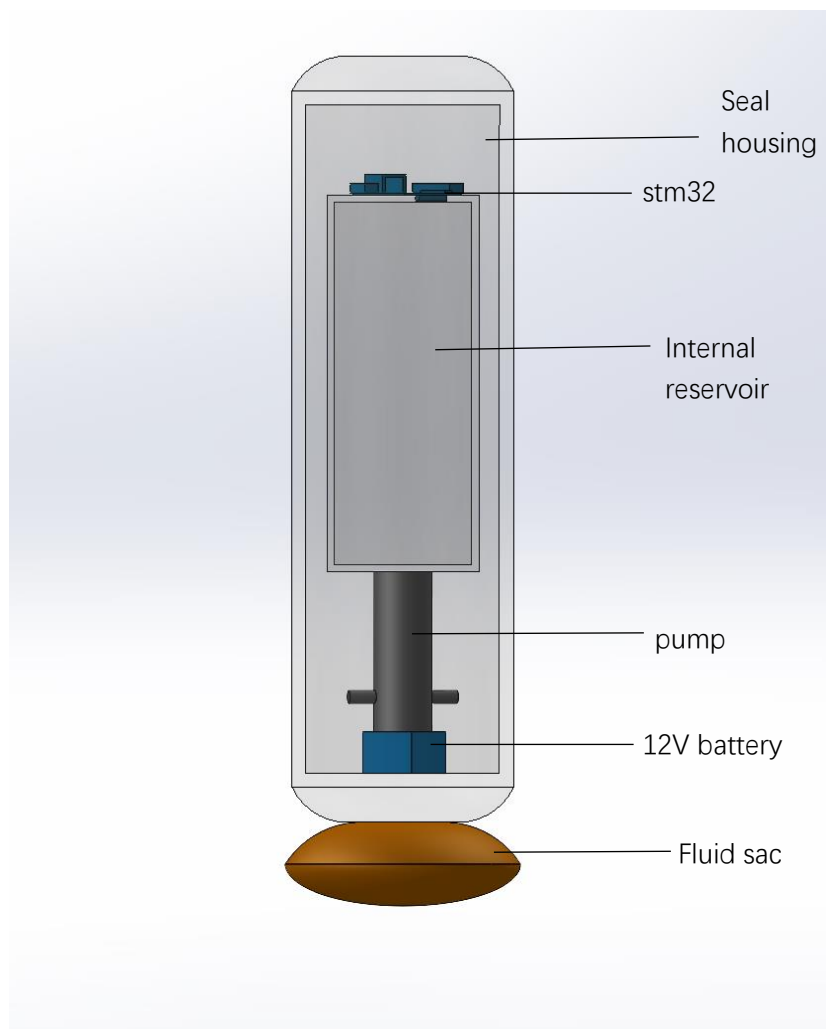


# Buoy Report

## Brief description of principle

1. function: Profile buoy capable of completing vertical movement (That is, from the surface to the bottom and back to the surface)
2. principle: The buoyancy driving device is used to transport the fluid from the internal liquid reservoir to the external flexible air bag to replace the seawater and change the density of the buoy, so as to realize floating.
3. working process:
  - (1) initial: ROV arranges the buoy to the designated position on the water surface. The liquid sac is bulging and the buoy is located on the water surface.
  - (2) Dive: The liquid is transported from the liquid bag to the internal liquid reservoir. The air bag is in a relaxed state, and the buoyancy of the buoy is reduced, forming a dive.
  - (3) Float up: The liquid is transported from the internal reservoir to the liquid bag. The air bag is bulging, and the buoyancy of the buoy increases to form floating.

## Introduction to mechanical structure



Our buoy modeling is shown in the figure. It is mainly composed of a sealed shell, a

liquid reservoir, a hydraulic drive system and an air bag. A 12V battery is installed inside to supply power to the peristaltic pump. STM32 controls the pumping direction of the liquid pump. The liquid reservoir is connected with the pump, and the air bag is connected with the pump by a pumping pipe. The pump is connected with the battery and STM32. The overall height of the buoy is about 650mm and the diameter is about 160mm

### Selection of pumps

The following figure shows the appearance and parameters of the pump we selected, and its size, shape and function meet our requirements.

