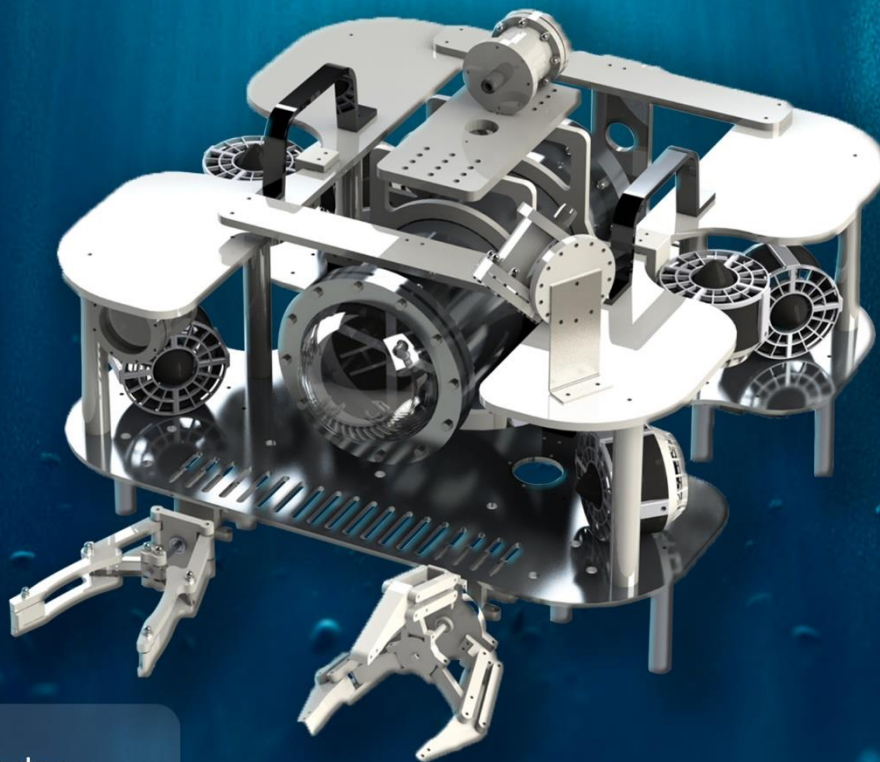# SAILFISH ROV
Your Eye inside Ocean

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NAVY
Non rov device '24

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MATE ROV COMPETITION EGYPT

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Non-ROV

Regarding the features of our remotely operated vehicle (ROV), it is not just a remote-controlled device, but there is also an autonomous system known as the non-ROV system. This non-ROV system assists in displaying and examining the seabed and enables exploration in deeper areas without the need for electrical or air stations. There are a few points we should mention before discussing design

Vertical float

- **Buoyancy**

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- **Buoyancy engine**

  Our company specializes in developing and implementing sophisticated buoyancy engines, tailored for various applications:

  1 **Internal reservoir**
  2 **External reservoir**
  3 **Actuator**

  These components form the core of our buoyancy engines, enabling precise control for vertical movement or forward propulsion in vehicles

- **Mechanical Design**

  In our design, we have selected a syringe as the internal reservoir and the fluid surrounding the non-ROV as the external reservoir. To control the flow of fluid, we have chosen a stepper motor as the actuator. Additionally, we have incorporated a specially designed hand to assist the ROV in holding the non-ROV. The non-ROV itself is constructed using PVC and Polyamide, which ensures a lightweight structure that aids in its buoyancy.

The primary concept behind the non-ROV is that when the ROV grasps and positions it in the designated area, the buoyancy, weight, and materials of the non-ROV work together to maintain a vertical position. Once the ROV releases the non-ROV, a vertical floating action begins. This is achieved by utilizing the syringe to suction the surrounding fluid, employing pulses from the motor. Once the suction process is complete, the non-ROV settles on the seabed, successfully achieving the desired vertical float.

Figure 1 vertical float

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- **Electrical control**

Overview of the vertical float mechanism and its components: Arduino Uno, NEMA 23 motor TB6600, and SIM 800L module.

Objective: Enable controlled sinking and floating in water while transmitting UTC time information via SMS, company number, pressure data, and depth data.

Components and Functionality

Arduino Uno as Central Controller:

- Responsibilities: Managing the NEMA 23 motor TB6600 and SIM 800L module.
- Motor control: Manipulating the vertical movement of the float within water.
- SMS transmission: Facilitating the sending of UTC time information upon float resurfacing.
- Pressure sensor (BMP-180): Monitoring pressure changes while sinking and floating in water.

Power Supply Configuration:

- Utilization of eight D-type batteries providing a combined voltage of 12 volts.
- Direct power supply for Arduino Uno and NEMA 23 motor TB6600.
- Voltage conversion for SIM 800L module: Introduction of a converter due to its requirement of 5 volts.

Safety Features:

- Integration of a sealed push button for convenient activation and deactivation.
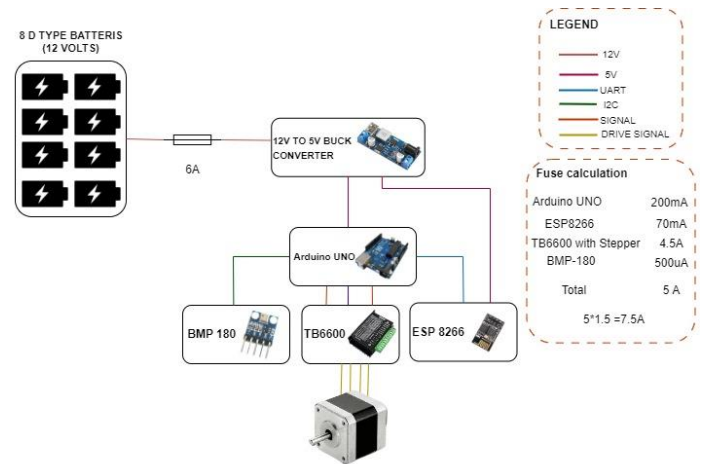- Inclusion of a 6-Ampere fuse as a protective measure within the system to ensure safe operation.

- **Vertical Float SID**

Figure 2 Vertical Float SID

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