

Solar Energy Marine Garbage Recycling Boat

Purpose of this project:

The purpose of this project is to address the marine pollution caused by garbage and exhaust emissions, and to construct a 1:30 model ship made by a boat that collects marine garbage using solar power to generate electricity.



Experimental procedure:

I first constructed the shape through 3D modeling, and then assembled the hull using laser-cut acrylic plates which I bought from Amazon. In the process of assembling the hull, I use hot melt adhesive to glue the gaps of the acrylic plates, and divide the hull into four main parts: 1. solar panel 2. main control compartment 3. buoyancy compartment 4. motor compartment



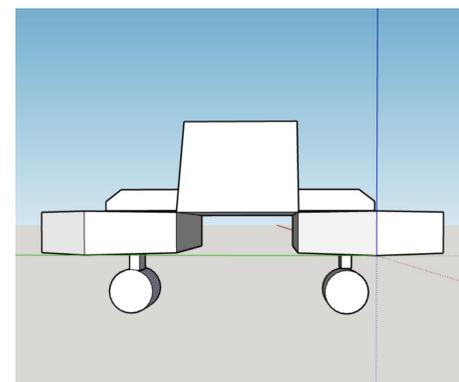
Picture of my boat

The main functions of garbage recycling boat:

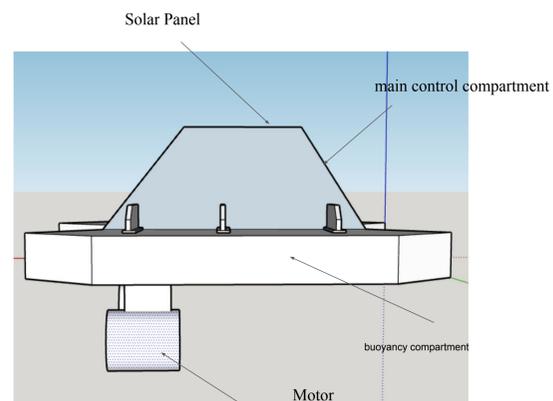
1. Navigation
2. Garbage recycling

How to achieve the garbage recycling:

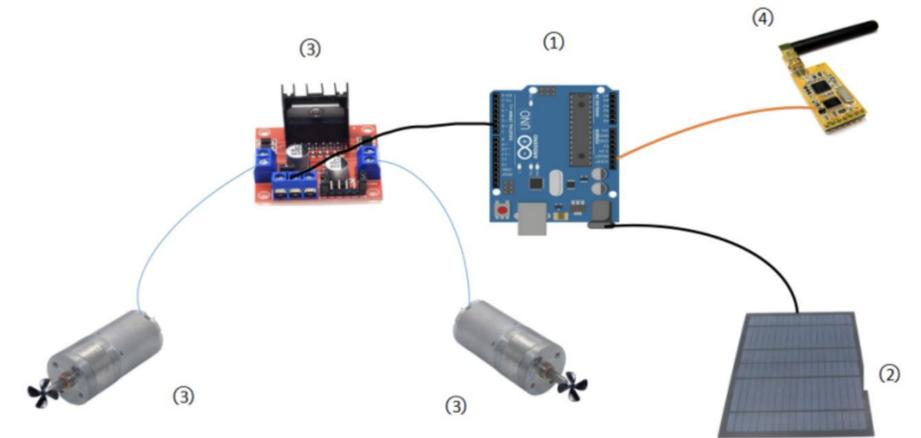
1. Design robotic arms on the hull to pick up Marine debris
2. Use large nets to collect garbage by sailing



3D Modeling (Right view)



How it works: (Work principle)



The designing electronic section of my boat

1. Use Arduino to control the boat.
2. The energy part is charged by solar panel and spare batteries. Solar panels are mainly used for power generation, and spare batteries are used in emergency situations
3. This part is the motion system of the boat. L298N control motor, so as to realize speed adjustment and direction rotation
4. This part is the wireless control part of the ship, through the wireless signal to achieve the ship running control

Test and the problem I meet:

1. For the selection and size design of hull materials. Considering the durability and floating force of the ship, the structure and size of the hull should be optimized and tested continuously.
2. When I choose the electric component, I need to take into account the reliability and waterproof of electronic components and the stability of signal transmission,
3. The problem of garbage recycling efficiency and the correlation between the size of the tail opening and the function of the ship need to be considered.

How to solve thos problem:

1. After continuous testing of foam, plastic, wood, glass, acrylic and other materials, I finally chose acrylic plate as the material.
2. I also continued to select and reprocess materials, such as waterproof treatment and signal amplification treatment.
3. This process requires me to continuously test and adjust the scheme to determine the size and capacity of the stern recovery device.
4. At present, the sealing and connection instability of the hull can be better solved by bonding hot melt adhesive and acrylic plate.
5. add boost module, output more voltage, strengthen the motor speed, so as to obtain stronger force

Social value of my project:

Encourage young people to use scientific knowledge to contribute to society
We will advocate the protection of Marine ecological environment
Raise awareness of environmental protection and hands-on creation

Experiment Components:(Mainly)



-UEETEK L298N Dual H Bridge DC Stepper Motor Driver Module Controller Board

Soldering iron