International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 09 Issue: 06 | Jun 2022 www.irjet.net p-ISSN: 2395-0072

"MANUFACTURING OF ELECTRICALLY OPERATED WASTE COLLECTING MACHINE FROM STAGNANT WATER, PONDS etc."

Mohammed Sakib Sultanpure[1], Guruprasad Maki[2], Harshal Hosmani[3], Basavaraj Nayakodi[4], [5]Prof. V.M.Khadakbhavi, [6]Dr. Rajendra M Galagali

[1,2,3,4] *Student, Department of Mechanical Engineering, S.G. Balekundri Institute of Technology, Belagavi, Karnataka, India*
[5] *Associate Professor and Project Guide, Department of Mechanical Engineering S.G. Balekundri Institute of Technology, Belagavi, Karnataka, India,*
[6] *Professor & Head, Department of Mechanical Engineering S.G. Balekundri Institute of Technology, Belagavi, Karnataka, India*

Abstract - *This project focuses on the design and manufacture of marine debris cleaners. This project discharges millions of liters of sewage and contains pollutants, toxic substances, debris and more. The Government of India has outsourced lake cleaning to and has invested huge amounts of capital in many river cleaning projects in both North and South India. It is imperative to reduce pollution of lakes and rivers, which are the lifelines of civilization. Today, almost every manufacturing process is atomized to deliver product faster. Automation plays an important role in the mass production. In this project, we built the Lake remote control washer. The main goal of this project is to reduce manpower, time, and consumption of, primarily for cleaning lakes on the surface of the water. The project used a motor and chain drive deployment to automate the lake cleaning process. Some automation needs are described below. Here you can use the RF transmitter and receiver to control the washer. Automation can be achieved with computers, hydraulics, pneumatics, robotics and more. Of these options, pneumatics are an attractive medium for low-cost automation.*

***Key Words*: Onsite handling, Catia, Storage and processing, Lifting mechanism, Electric motor**.

1. INTRODUCTION

When you walk in almost every part of India, you'll find garbage scattered all over the roadsides, railroads, riverbanks, and more. However, this problem is not just an aesthetic insult, it is a problem that damages the environment and leads to countless health problems of the Indian people.

There are no solid waste treatment systems in most parts of India. Garbage is inevitably thrown into the environment, decomposed outdoors and attracts flies and mice. Much of the waste that is landfilled is made up of non-biodegradable materials such as polyethylene and other non-biodegradable plastics, so toxic components slowly seep into the soil, contaminating the soil and groundwater and permanently. Remains in the environment. Animals often stop by to look for this trash to look for food and often die from ingesting harmful substances such as plastic and polyethylene.

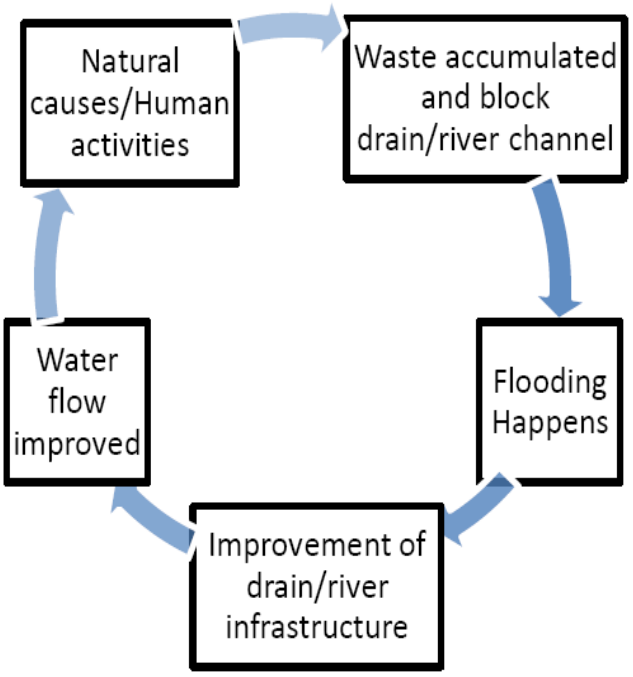
This solid waste is washed away by humans or by heavy rains during the monsoon season into the waters of the surrounding area. In an aquatic environment, large amounts of biodegradable waste deprive water of large amounts of oxygen and decompose it, leading to disease and death of fish and other aquatic organisms. The floating non-biodegradable substances in the river impede the free flow of water and slowly release harmful chemicals into the water itself. Aquatic organisms often accidentally eat these substances and die. Many cities in lakes and other bodies of water do not have solid waste treatment systems at all. In that case, it is not enough to handle the amount produced daily. Another major problem is the lack of education and environmental awareness of the general public. People have no place to throw trash, so they inevitably throw trash without noticing the results. The main causes of water pollution in lakes are increased population density, various human activities (bathing, washing, bathing animals, etc.) and the discharge of various harmful industrial wastes into the river. The most common cause is that many believers with religious beliefs come as part of their worship, pray, provide wreaths, and the next day they are thrown into the holy lake and later disintegrate and smell. It is a religious event that causes and causes water pollution.

1.1 Problem Statement

In recent years, India has generated an estimated 56 million tons of solid waste. Over 35% of MSW has not been collected at all. 70% of Indian cities do not have sufficient transportation capacity. However, in recent years, the consumer market has grown rapidly, being packaged in non-biodegradable products such as cans and plastics, causing immense damage to the environment.

Solid waste in water bodies often causes blockages and cleaning projects are costly. Even after countless structural and gate control system improvements, sea routes remain

clogged, causing flash floods, especially during heavy rains. Figure 2 below shows the process that caused the problem.



2. SYSTEM CONFIGURATION

- **COMPONENTS**

1. **Main frame :** 1.5*1.5 inches

2. **Shovel:** The shovel is attached by 2 horizontal links to the frame which is driven by the motor

3. **Garbage tank:** A trash tank is a container for storing waste. It is made up of galvanized steel which is being placed at the center of the frame.

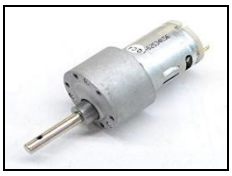
4. **Propeller:** Propulsion is the mechanism or system used to generate thrust to move a boat across water.

5. **Polyethylene foam:** Polyethylene foam is multimodal molecular weight distribution foam, which consists of several polymer fractions, which are homogeneously mixed.

6. **Motor:** DC MOTORS

   1. Two motors 100RPM

   2. 10 RPM



7. **Acid battery:** 12V DC Acid Battery

8. **Bluetooth control:**

   Maximum output power – 25mW/4dBm

3. WORKING

The purpose of our project is to clean rivers, ponds and lakes. This can be improved by easily navigating the water using a floating device consisting of a paddle and a propulsion mechanism. The proposed concept shown in the figure has the advantage of mobility over other concepts. You need a floating device to get the idea for this feature. Above this floating device is a trash can placed in the center of the system to balance the weight. The trash can is conical to collect more trash. The device is housed on both sides and propelled by two propellers located on the central axis of the structure, powered by a motor and acid battery to increase navigation flexibility. On the front of the system is a motor-powered ladle. The scooper collects trash from the water,

lifts it to a certain height, and throws it in the trash can. The central waste tank serves to store the waste generated during operation. The system is controlled by a Bluetooth controller. People control the entire system from a safe place on land.

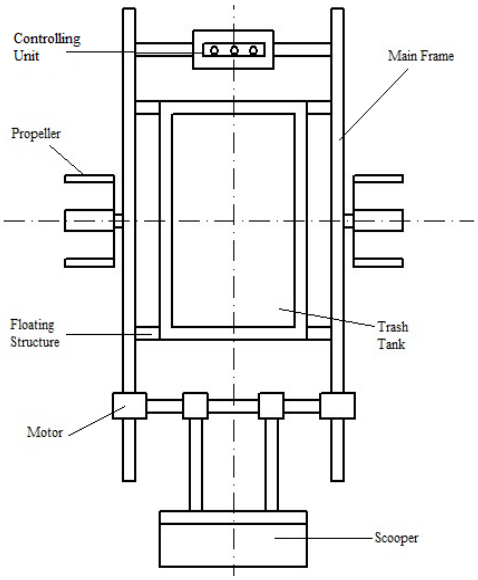


Figure 1.6 Working model

4. CONCLUSIONS

A cost-effective waste washer that can clean and dispose of waste from stagnant waterways has proven its value and has achieved the main objectives of this project. Achieving the goal means successfully addressing the problem. We designed, improved and manufactured a garbage washer.

ACKNOWLEDGEMENT

We would like to express special thanks to **Dr. B .R. Patagundi, Principal, SGBIT, Belagavi** for providing ample opportunity to work on live industry based project.

We would like to express gratitude towards **Dr. Rajendra M Galagali, HOD, Department of Mechanical Engineering, SGBIT, Belagavi** for encouraging us to achieve objectives of project.

We honour **Prof. Vishwanath Kadakbhavi, Associate Professor and Project guide, SGBIT, Belagavi** for his valuable time and keen interest on this research work and project.

We are grateful to, **Assistant Professor, SGBIT, Belagavi** for encouraging us in conduction and generous support during the conduction of the project.

Finally, we are thankful to the staff of **Department of Mechanical Engineering, SGBIT, Belagavi** for their Constant encouragement and support.

REFERENCES

1. Sinha, P. Bhardwaj, B. Vaibhav, and N. Mohammad, "Robot Boat Research and Development-Autonomous Cleaning Robots", Proc. From SPIE Volume 9025.
2. S. R. Ho, R. Smith, and D. O'meara, "Biomechanical Analysis of Dragon Boat Paddling: Comparison of Elite and Sub-Elite Paddler," Journal of Sports Sciences, pp. 37-47.
3. R. W. Colbrunn, "Design and Control of Robot Legs with Braided Pneumatic Actuators," Case Western Reserve University, Department of Mechanical and Aerospace Engineering.
4. D. S. Cabrera und A. L. Ruina, "Propulsion Efficiency of Rowing All", Cornell University, Institute of Bio-robotics and Mobility.
5. Herr P. M. Sirsat、Dr。I. A. Khan、Herr P. V. Jadhav, Mr. P.T. Date, "Design and Manufacture of River Waste Washers", IJCMES 2017 Special Issue-1 ISSN: 2455-5304.
6. Huang Cheng, Zhang Zhi *, "Identifying the

   Most Efficient Way to Improve Water Quality in Rapidly Urbanized Areas Using the MIKE 11 44 44 Modeling System", 2015 7th International Measurement Conference Technology and mechatronics automation.
7. Cary, Howard B.; Helzer, Scott C. (2005). "Modern Welding Technology Upper Saddle River", NJ: Pearson Education.
8. Ndubuisic. Daniels, "Drainage System Cleaner A Solution to Environmental Hazards", IRJES) ISSN (Online) 2319-183X, Volume 3, Issuen3 (March 2014).
9. Osiany Nurlansa, Dewi Anisa Istiqomah, Mahendra Astu Sanggha Pawitra, "AGATOR (Automatic Garbage Collector) as an Automatic Garbage Collector Robot Model", International Journal of Future Computer and Communication, Vol. 3, Nr. October 5, 2014.
10. Basant Rai, "Pollution and Conservation of the Ganges River in Contemporary India.