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REMOVAL OF WASTE MATERIALS FROM LAKES AND PONDS BY RC FRAME

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Abstract

In Recent Days the rivers, lakes and ponds are contaminated by garbage's like plastic wastes, greenwaste algae and aerial lotus etc. Removal of waste on static ponds are challenging task formunicipality corporations in the current scenario. Proper disposal of sewages from industries and commercials are still a challenging task. The manual effort for cleaning work on ponds, river and lake cleaning should be reduced and replaced by automated system. Automation plays a vital role inall industrial applications. In this project the proposal the replacement of manual work on ponds, river and lake cleaning by automated system. We designed our project for the way to control the disposal of wastages and removal of solid wastages from ponds, rivers and lake by using automatic system-controlled machine.

The Methodology is divided into 6 Parts:

1. Concept study
2. Problem statement
3. Proposed system
4. Planning & Designing
5. Materials selection
6. Fabrication
7. Working output & result

All these seven parts were assembled together and experiments were then performed to build a systemthat can waste materials from lakes and ponds.

Keywords: 4IR controlling system

1. Introduction

The "ponds and river clean up machine" used in that places where there is waste debris in the water body which are to be removed. This machine is consisting of water will drive by conveyor mechanismwhich collect & remove the wastage. garbage & plastic wastages from water bodies. This also reduce the difficulties which we face when collection of debris take place. A machine will lift the waste surfacedebris from the water bodies, this will ultimately result in reduction of water pollution and lastly the aquatic animal's death to these problems will be reduced. It consists of belt drive mechanism which lifts the debris from the water.

The use of this project will be made in rivers, ponds, lakes and other water bodies for cleaning upper water waste debris. From this project we hope to clean the surface water debris from bodies. Similarly,they are lots of problems of water pollution under Godavari River, Nashik which affect the acoustic, human life and beauty of Godavari River.

It affects healthy badly and also causes skin allergies. The mechanism which can auto collect floatinggarbage and solid waste from the water surface and collect it into its floating bin. It can be programmed,scaled up to any size and can operate remotely. The system is indigenous and efficient to take river cleaning cause.

II. LITERATURE REVIEW

2. Literature Review

Ganesh U Let.al. [1] showed the usage of mechanical drainage cleaner to replace the manual work required for drainage cleaning system. Drainage pipe is very dirty. Sometimes it is harmful for humanlife while it's need for cleaning drainage system. To overcome this problem, they implement a mechanical semi-automatic drainage water cleaner and so the water flow is efficient because of regularfiltration of wastage with the help project. Different kind of environment hazards reduced with the helpof drainage system machine.

Dr. Kumaresan, et.al. [2] explained manual work converted to automated system. Drainage using for disposal and it may be loss for human life while cleaning blockage in the drainage pipe. To overcomethis problem, they implemented, "automatic sewage cleaning system". They designed the project different way clearance of gaseous substance are treated separately so the flow of water efficiently. This project may be developed with the full utilization of men, machine, and materials and money. theymade their project economical and efficient with the available resource. They used automationtechnology concentrate with his application of mechanical, electronics, computer-based systems to operate and control production.

Mr. Abhijeet., et.al. [3] Design and fabrication of river cleaning system. India is holy country & duringlots of festival like ganeshvisarajan, navratridurga puja & mainly siahnsthkumbhmela there is lots of Godavari river at nashik. the water pollution is very important problem in rivers, ponds and water bodies near Godavari River at Nashik. Due to increase in water pollution in the form to waste debris; it is hampering the life of aquatic

animal and make their life in dancer. Similarly, sometimes the aquaticanimal tends to eats surface waste debris considering it as a food; which ultimately cause the death of animals. Due to polluted water many skin diseases to human kind are observed. So that to reduce the water pollution we are trying to make river clean up machine. "River clean up machine" a machine which involves the removing the waste debris from water surface and safety dispose from the water body. The river cleanup machine works on hydropower to extract waste debris, plastics & garbage fromGodavari River at Nashik.

Problem Statement

In the absence of garbage disposal facilities, the practice of dumping garbage into nearby water bodieshas become quite common in recent years and has posed long-term negative impacts both onbiodiversity of the area and as will as on the local environment.

The very basic idea should be satisfied that is to avoid the interference of the operator. This will happenonly by the adoption and the sustained usage of technology in the workspace.

Another important easy removal of waste which are collected in the collecting box.

It should not harm be aquatic animals. It must not have any property that has adverse effect on the water source.

3. System Design

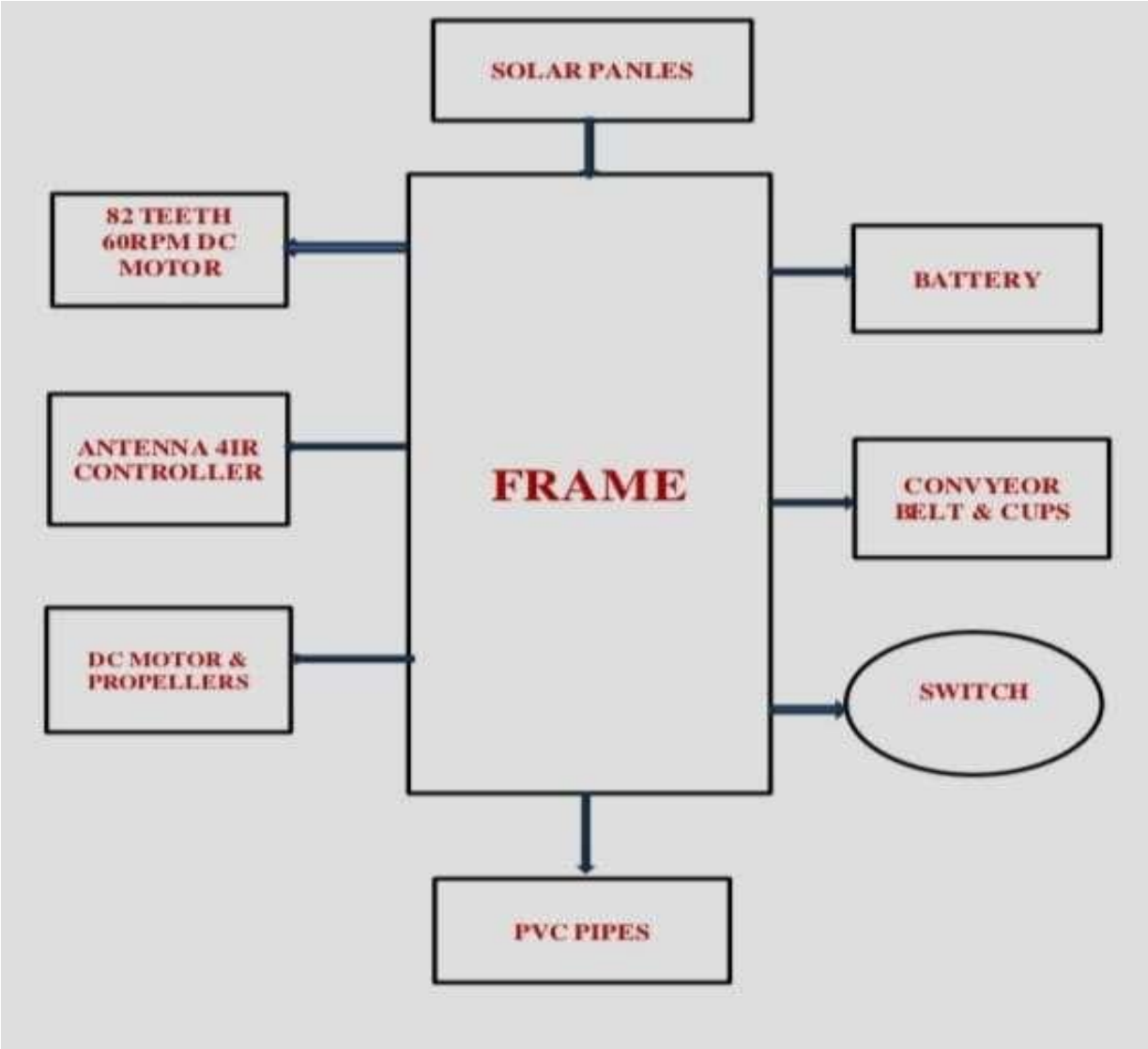

Figure 1 : Block Diagram

1. Each robot is comprised of a head, which is covered by a layer of photovoltaic cells, and conveyor belt. The photovoltaic cells generate. enough electricity to keep the fleet moving for several weeks and provide the energy to propel the vehicles forward.

2. As the head moves through the water the conveyor belt constantly. rotates and sucks up waste materials like plastic and others.

3. conveyor will be collecting waste and drop in the collecting tray which is fitted in the bottom ofthe conveyor belt.

4. This process is more streamlined than current ocean-skimming technologies because the robotscan operate autonomously and don't need to return to the shore for constant maintenance. As thevehicles work in unison, they can cover large areas and by communicating with each other andresearchers on land.

4.Hardware components

1. Solar panels: Solar panel refers either to a photovoltaic module, a solar thermal energy panel, or toa set of solar photovoltaic (PV) modules electrically connected and mounted on a supporting structure.A PV module is a packaged, connected assembly of solar cells.

2. Batter: In isolated systems away from the grid, batteries are used for storage of excess solar energy converted into electrical energy. The only exceptions are isolated sunshine load such as irrigation pumps or drinking water supplies for storage. In fact, for small units with output less than one kilowatt.Batteries seem to be the only technically and economically available storage means.

3. Conveyor belt &cups: A conveyor belt works by using two motorized pulleys that loop over a long stretch of thick, durable material.

When motors in the pulleys operate at the same speed and spin in the same direction, the belt moves between the two.

we used conveyor belt connected with metal cups which carries the waste by rotating were conveyorbelt connected with small barring's and de motor 12volt 60rpm dc motor this two helps to rotate freely.

4. PVC Pipes: PV cells are made up of materials that are produced excited electrons when exposedto light. Or Structures. They are lightweight and easy to install them a popular choice for undergrounddrainage system.

PVC pipes effectively the flow of water without clogging

PVC pipes transport waste water away from buildings corroding

5. DC motors and propellers: DC motors were the first type widely used, since they could be poweredfrom existing direct-current lighting power distribution systems. A DC motor's speed can be controlledover a wide range, using either a variable supply voltage or by changing the strength of current in its field windings. Small DC motors are used in tools, toys, and appliances.

It is a mechanical device used to develop thrust inside the water for propelling the floating body.

6. Antenna & 4IR controller: An antenna is used to catch the desired frequency waves. The circuit islow cost and can be constructed easily by using this circuit, we can control any appliance with the help of remote. In this project, there are two parts one is in transmitting suction and the other is in receiving section, receiving section will be in a stable position which is connected to any load and transmitter will act as normal remote.

There are 4IR control circuit where the 1,3 are used to forward move and 2,4 are used to reverse and2,3are used to move right and 1,4is on it moves to the left side.

7.82 teeth 60 rpm dc motor: A ball bearing usually consists of four parts: an inner ring, an outer ring, the balls and the cage or separator. The spur gears, which are designed to transmit motion and power between parallel shafts, are the most economical gears in the power transmission industry.

Spur gears or straight-cut gears are the simplest type of gear. They consist of a cylinder or disk withteeth projecting radially.

8. Frame: Frame structures are the structures having the combination of beam, column and slab to resist the lateral and gravity loads. These structures are usually used to overcome the large momentsdeveloping due to the applied loading.

Figure 2: Our Module

4. Some Common Mistakes

1. Difficult to identify if the model fails at night
2. Sensitive Components can get damaged due to heavy rain
3. Malfunction/ breakdown in the middle of the lake
4. We can use lights or detector to locate the module Difficult to identify if the model fails at night
5. Sensitive Components can get damaged due to heavy rain
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7. We can use lights or detector to locate the module

5. Conflict of Interest

1. Remote control operation makes it a single person job
2. Skims the surface of water bodies and uses a wire mesh to collect garbage
3. Ph and turbidity sensor help in detecting the level of pollution
4. Solar panels help to increase the battery life and increase operational hours
5. Rudderless operation ensures simplicity and makes the system easy to repair
6. Wireless live stream camera for android display
7. 24v strobe light improve visibility in fog and low light condition.

6. Result and discussion

If the model wants to be built for a large scale, then we want larger amount to solar energy we have touse large solar panel and all the components should be bigger in size depending upon the size of the model we need to change the usage of PVC pipes into the concept of ships floated on the surface of water and we can increase the speed and amount of waste material collecting.

Use of advance technology we and add such as turbidity sensor to detect automatically pollution percentage %of lakes/ponds and we can set a wireless camera to detect the waste material easily.

If we use this concept to clean the oceans and rivers, we can control the pollution of oceans and rivers.The module should be very big to collect the huge amount of waste

They need more solar energy because it should travel a long distance to collect waste.

This module is built for main purpose to make lakes and ponds free from plastic and other harmful material and keep the good aquatic life and aquatic environment.

By using this model, we can reduce the tons of plastic and other materials from lakes /pons and make lakes/ponds of Karnataka fit(good) for aquatic ecosystem

7. Conclusion

The model can be scaled up with higher capacity for larger water bodies

This model is built with main purpose of making our lakes and ponds free from plastic and other harmful material

By using this model, we can reduce tons of plastic and other waste from lakes/ponds and make lakes/ponds of Karnataka fit (good) for aquatic ecosystems

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8. References

[1] Ganesh U L, et.al., "Semi- Automatic Drain for Sewage Water Treatment of Floating Materials" International Journal of Research in Engineering and Technology, Vol No-05.Jul-2016.

[2] Dr.K.Kumaresan, et.al., "Automatic Sewage Cleaning Equipment", International conference on Exploration and Innovation in Engineering and Technology.2016.

[3] NitinSall, et.al., "Drain Waste Water Cleaner", Global Journal of Research in Engineering: J General Engineering Vol No-16,2016.

[4] S.D.Anap, et.al., "Wireless Based Water Level Monitoring and Control System", International Advanced Research Journal in Science. Engineering and Technology, Vol No-3.April 2016.

[5] James C.Y. Guo, et.al., "Winter Sand Recollection by Highway Drainage", ASCE J. of Drainageand Irrigation Engineering. Vol 125, No 6, Nov-1999.

[6] Gregor Burger, et al., "Design and Implementing A Multi-Core Capable Integrate Urban Drainage Modeling Toolkit: Lessons from Citydrain", Advanced in Engineering Software100, 2016.

[7] K Raghavendra, et.al., "Design of Machine Elements: (DME-II) by First edition 2015.