

ASMA AERIAL LOTUS REMOVING MACHINE FOR LAKE AND RIVER

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Abstract— The project emphasizes on design & construction of river and lake cleaning mechanism. The technique has proven to be effective in cleaning floating solid trash from the river's surface. This technique strives to achieve its social goal of cleaning rivers and other bodies of water. Its operating principles are based on the customarily used methods of using conveyors, but it has an alarming alteration to the mechanism to improve its efficiency. However, these approaches are dangerous, expensive, time consuming, and necessitate a large crew. The operated river cleaning machine was developed by taking into account all of the parameters of river and lake surface cleaning systems and eliminating the disadvantages of all of the ways mentioned previously created and built to aid in the effective, efficient, and environmentally friendly cleaning of river surfaces. Water hyacinth is a native of the Amazon Basin and one of the world's most toxic aquatic weeds, according to the study. The development of water hyacinth in temperate, tropical, and sub-tropical waterways is aided by a lack of natural enemies and nutrient-rich water bodies. When the weed's rapid mat-like spread covers areas of fresh water, it produces a slew of socio-economic and environmental issues. The mechanical method is the most cost-effective in terms of control, followed by biological, manual, and chemical methods. The focus of this project is on the design and construction of a river trash cleaning machine. "Aerial lotus River and Lake Cleaning Machine" is a machine that removes waste particles from the water's surface and safely disposes of it. The operation was carried out in response to the current state of our national rivers,

which are dumping crores of liters of sewage and are clogged with pollutants, hazardous compounds, and debris, among other things.

I. INTRODUCTION

The River and lake aerial lotus removing machine used in that places where there is waste debris in the water body which are to be removed. This machine consists of different The size of the fins in which garbage will collect between them. This also lessens the problems we have when collecting debris. In this machine, one end of the fins is fixed and the other is movable; we lift the fins from the moveable side using servo motors. All of the waste debris is collected in a tank near the boat's stern. This will eventually result in less water contamination and, as a result, fewer aquatic animals will perish as a result of these issues. This project will be used to clear surface water debris from bodies in rivers, ponds, lakes, and other water bodies. Aquatic weeds are uncontrolled plants that develop and finish their life cycle in water, causing direct and indirect harm to aquatic ecosystems and related eco-environments. Water is one of the most vital natural resources on the world, and it serves as the foundation for all life forms. Pumps and turbines in super thermal and hydroelectric power plants can be damaged by aquatic weeds, lowering electric production and increasing power plant maintenance costs. Many aquatic plants are valuable because they have the potential to reduce agricultural, residential, and industrial pollution for a limited time. Many aquatic weeds have the potential to assist fish production by supplying a steady supply of phytoplanktons. The aquatic plant's phytoremediation capability can be further boosted by using cutting-edge phytoremediation techniques. In order to show the extensive applicability of phytoremediation, a summary assessment of the use of aquatic plants in phytoremediation has been compiled. The selection of plants species is the most significant aspect for successful phytoremediation.

II .EXISTING SYSTEM

The existing system is completely a mechanical based project. It is a stationary system, simply kept in the sewage area to collect the aerial lotus removing passing over it. The rims are moved by a chain and sprocket, which are provided with fins to collect garbage from the sewer. The boat is propelled forward by the rotation of the chain and the rims, and the floating wastes are gathered between different sizes of fins and dumped in the bin at the back of the system.

III. PROPOSED SYSTEM

The problem of water logging caused by the removal of aerial lotus leads to the development of a pest growth system. Because this is dangerous to human life, the concept for this research arose. The goal of the proposed project is to design and build a drainage cleaning machine that would protect individuals from being harmed by sewage when cleaning manually. The goal of this proposed system is to reduce or eliminate the problems associated with using a man-operated equipment, as well as the increased trash disposal rate.

DESIGN AND FABRICATION OF RIVER CLEANING MACHINE

Initially whole water is removed from the tank. Detergent is then put on the tank's inner wall to make dirt removal easier. The frame carrying the cleaning arrangement is placed near the opening of water tank and the manual rotation is provided by means of hand lever which is coupled to pinion gear is operated in clock wise direction. This makes the rack coupled with it to move linearly towards down ward direction and makes the cleaning arrangement to enter into the tank. This motor is activated until the bottom mounted brushes touches bottom surface of tank. Now the hand lever which is connected with adjusting lever is pressed against the folding link, which causes the adjusting link to extend and this makes the brushes which are mounted perpendicular to the link to contact against side surface of water tank. Now the motor for performing cleaning is switched ON, which causes entire setup to rotate and creates scrubbing of inner walls of tank by the brush movement. In this way the tank gets cleaned within a minimum time and with less human effort

This project emphasis on design and fabrication of the river waste cleaning machine. The operation was carried out in response to the current state of our national rivers, which are dumping crores of litres of sewage and are clogged with pollutants, hazardous compounds, and debris, among other things. The Indian government has taken care of river cleaning and has invested a significant amount of money in programmes such as "NamamiGange," "Narmada Bachao," and many more major and medium initiatives in cities such as Ahmadabad, Varanasi, and others. Taking this into account, this machine was created to clean the surface of river water. Almost every manufacturing process is being atomized these days in order to provide products faster. In mass production, automation plays a crucial role. We built a remote-controlled river cleaning machine for this project. The project's major goal is to reduce the amount of manpower and time spent cleaning the river. With the help of a motor and chain drive arrangement, we were able to automate the operation of river cleaning in this project. The following are some automation requirements. The cleaning equipment is controlled via an RF transmitter and receiver. Computers, hydraulics, pneumatics, robotics, and other sources of automation can all be used, but pneumatics is a particularly appealing medium for low-cost automation. This equipment was developed to clean the surface of a river.

III. DESIGN & FABRICATION OF RIVER CLEANING SYSTEM

India is holey country & during lots of festival like ganeshvisarjan, navratridurga puja & mainly Siahnsthkumbhmela there is lots of water pollution 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 danger. Similarly sometimes the aquatic animal tends to eats surface waste debris considering it as a food; which ultimately cause the death of animals. Due to polluted water is are many skin deices to human kind are observed. So that to reduce the water pollution we are trying to make river cleanup machine. "River cleanup machine" a machine which involves the removing the waste debris from water surface and safely

DC MOTOR

A DC motor is any of a class of rotary electrical machines that converts direct current electrical energy into mechanical energy. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic; to periodically change the direction of current flow in part of the motor. Different number of stator and armature fields as well as how they are connected provides different inherent speed/torque regulation characteristics. The speed of a DC motor can be controlled by changing the voltage applied to the armature. The introduction of variable resistance in the armature circuit or field circuit allowed speed control.

Specification:

- Motor capacity :12v
- Un loading :90rpm
- Loading :130rpm

Motor Calculation Type: -

DC Motor Power= $V \times I$

Where, Volt= 12V Amp

=7.6-Amp

Power= 12×7.6 ,

Power= 91.2 watt

dispose from the water body. The river cleanup machine works on hydropower to extract waste water debris, plastics & garbage from Godavari river at Nashik

IV. DESIGN OF RIVER CLEANING MACHINE

This project stress on design of the stream waste cleansing machine. "River cleansing machine" is a machine that removes waste dust from water surfaces and disposes of it safely in the water body. The work was done in response to the current situation of our national rivers, which are dumping large integer litres of waste product and loaded with pollutants, toxic materials, debris, and other pollutants as a result of an increase in pollution within the type of waste debris; this is causing aquatic animal's lives to be jeopardised and putting their lives at risk. The project's major goal is to reduce the amount of manpower and time spent cleaning the stream. During this project, we stored energy in a battery and utilised it to clean the stream with the help of a motor and conveyor system.

V. DESIGN AND FABRICATION OF RIVER WASTE

COLLECTOR

This project emphasis on design and fabrication of the river waste collector. India is a holy country with diversified culture and different religious festivals which sometimes causes pollution among which water pollution is major. . Different types of solution have been used by the government to solve such issues. So this work is done after focusing on the current situation of our water reservoir. The government of India has taken charge to clean rivers and invest huge capital in many river cleaning projects like "NamamiGange", „Narmada Bachao"" and many major and medium projects in various cities like Ahmadabad, Varanasi etc. So that to reduce the water pollution we are trying to make river cleaning machine. "River Waste Collector" a machine which involves the removing the waste debris from water surface and safely dispose from the water body

VI. DESIGN AND FABRICATION OF REMOTE-CONTROLLED SEWAGE CLEANING MACHINE

The goal of the project is to automate the sewage cleaning process in drainage systems in order to reduce disease transmission to humans. By removing leftovers that can attract and nourish bugs, the black water cleaning method helps to avoid insect infestations. It also extends the shelf life and improves the sensory quality of food. The suggested technology uses a remote control to operate the equipment that cleans the sewage. As a result, this system mitigates the negative effects of sewage waste and its toxic gases. This aids in the prevention of mosquito breeding due to waste. The system has a wiper motor that activates as soon as the system is turned on. The wheel is coupled to two power window motors, which are controlled by a remote control system. The operation begins by collecting sewage wastes with the arm and then throwing the waste back into the machine's bottom bin. An arm is utilised to hoist the sewage, which is then collected in a bucket. The system works even in sewage areas, using water (restricted to a certain volume) to collect waste that floats on the water's surface. Garbage

that clogs the drains is also collected and removed. This technology requires less human interaction in the cleaning process, which lowers disease transmission to humans. The polarisation of modern services is increasing.

VII. WORKING PRINCIPLE

The major goal of this initiative is to clean up floating solid debris put in fresh water resources by various sources. The system is made up of several components, the most important of which are:

- Power supply/battery
- Conveyors (inclined and flat)
- Trash rack
- Wired Control Box
- DC Gear Motors and respective electronics elements.

The design section shows how to put this system together. The buoyancy force included with the help of a located at the bottom base of the overall system gave the system its floating nature.

The system's balancing was taken care of on both sides, which were located at the system's mid-back. However, balancing isn't the only purpose of water movement. The water wheel's other important duty is to provide movement to the system in any direction, including front, back, left, and right. The front and back motions are achieved by turning the water boat in different directions using DC Gear motors and couplings in the main system, as well as toggle switches in the main controller box.

Starting and stopping the relevant water boat provides the turning motion; for example, if the system needs to turn right, the right water boat stops and the left one spins, and vice versa for the left turn. The speed control mechanism for these water wheels is located in the main controller box.

To begin, the system is designed to travel to the location of dumped waste floating on the river or lake's surface. The water boat comes to a halt at that moment. The system's roller mechanism is attached to one end of the floating water, while the other end is attached to the guider.

The DC motor drives the roller mechanism. The primary controller box has an RF transmitter, a guider, and an RF receiver for broadcasting and receiving signals with the aid of an RC controller.

This is done to improve the system's efficiency, which can be

explained as follows: if floating solid waste in the river is dispersed, it would be more efficient to collect the dispersed waste in one location and then clean it up rather than moving a large system to various locations with small dispersed wastes at the cost of more power.

The guider is locked at its locking point once the loop is completed, and the loop is now fixed. Now, using a DC Gear motor and toggle switch, the moving mechanism's roller is rotated in the opposite direction so that the loop contracts to a smaller and smaller loop and all the dispersed trash is gathered in front of the system.

VIII. MAJOR COMPONENTS

- ❖ Frame
- ❖ Shaft
- ❖ Bearing
- ❖ D c motor
- ❖ Battery
- ❖ Metal strip
- ❖ Conveyor roller
- ❖ Conveyor belt
- ❖ Sheet metal
- ❖ Cutter
- ❖ Disc

IX. PROJECT IMPLEMENTATION



IX. REFERENCES

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