Review on River Cleaning Machine

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Abstract

Water is essence of life and is one of a basic and very important need of human beings..Human beings have taken the mother earth for granted and have polluted the earth like any thing. The water bodies have taken a major blow of pollution with industries polluting the water bodies without any guilt. Absence of strict monitoring has allowed the water bodies to be polluted to an extent that they have dries due to deposits and have either being converted in a dump of waste material or have converted into a dry land . This has resulted in an ecological imbalance and the the human race is facing its price in the form of climate change and various other issues like onset of new epidemics like the COVID -19 which has brought the human race on its feet. This work tries to review the various techniques which have been employed over the years to clean the water bodies .On the basis of review carried out

I. Introduction:-

Water waste is a common problem in different water areas around the world. Clean water and sanitation are very important matter to be monitored to avoid water contamination, fish killing, and extinction of different water species. All these contaminations and wastes on water can affect both the wildlife and people living around it.

Many people are irresponsible when it comes to waste disposal. The most common areas that people are irresponsibly throwing out their wastes are on rivers near bridges, tourist spot beaches, and ship terminals. When a major increase of water level happens in river, all the wastes are deposited to the canals on rural and urban areas. These events result in flooding of areas and major catastrophes both on the environment and on the people living in the area. Not only these wastes can block the canals, but they can also spread harmful and deadly diseases. People going through the flood would have high risk of infection, especially if they have an open wound on them and would also cause skin irritations on people with sensitive and allergic skin. Also, the fouling smell coming from the wastes is one of the major causes of health problems, especially on children who have significantly lower immunity to these things.

The wastes on the water areas are not only causing trouble on the people around it but also on the living organisms in the water. The fish and other living organisms are affected by the lack of oxygen because of the wastes scattered along the river. The waste results in the incapability of the water to sustain marine wildlife. According to Geer (2007), around 100 million tons of plastic is produced every year, of which 10 percent ends up in the sea. Ocean litter comes from many sources including wastes that washes off city streets, waste blown in from landfills and containers that fall off ships during heavy storms. Once in the water, the debris accumulates in large patches, travels with currents and washes up onshore. This litter is frequently consumed often with fatal effects on marine mammals.

Picking up wastes around water can be very tiring if it is done manually and it will take a lot of time. It is hard to see water areas that is packed with wastes especially when people are imagining how a water species can survive if some waste are poisonous for them and it can lead to water contamination. A simple plastic waste can influence different water species. Seeing all these happenings led us to a study that can help not only the people but also the living organisms on the water struggling on their current state.

II. Literature Review:-

Harshvardhan Baria, Mackwan Akash, Nirav Makwana, Raj Parmar, Mr. Sharad Chhantbar “Review Paper On Automated Drainage Cleaning System”[1], they a made a System which collects the floating waste from the drainage without any human assistances. They implemented a simple mechanism of motor, screw conveyer and sprocket, lifter in order to achieve an automated sewage wastewater treatment. This reduces human effort and during rainy season by increasing the motor speed, they can prevent the drain from getting block due to floating waste.

Manoj Rathod, Vasant Pund, Rahul Pungle, Jiwan Rathod “Automatic Floating WasteCollector” [2],have prepared a

machine to minimize the manual effort to clean the lakes and use automated system. They have merged all the systems of Mechanical, Electronic and Computer into one machine, which cleans floating wastes. This type of mechanism is simple in design also easy to use.

Mahto Ravishankarkumar Ravindrabhai, Dehadray Vaibhav, Kaka Smit, Prof. Ankur Joshi "Design And Fabrication Of River Waste Collector"[3], they modified the boat and converted it into a floating waste collector for rivers.This task is created dependent on contemplating distinctive writing and research on various papers so it can gives adaptability in activity.The undertaking "River Waste Collector" is structured with the expectation that it is especially useful to waterway and River cleaning.

Prof. N.G.Jogi,Akash Dambhare, Kundan Golekar, Akshay Giri, Shubham Take "Efficient Lake Garbage Collector By Using Pedal Operated Boat"[4], they have made a pedal boat with a conveyor system on it which collects and dumps the floating waste into the tank.This task concentrated on demonstrating, structure and control of pedal worked pontoon, with accentuation on lightweight, compact apparatuses.The goal was effectively accomplished impressing task in the environmental purpose.

Sheikh Md, Shahid Md Rafique, Dr. Akash Langde"Design and Fabrication of River Cleaning Machine"[5], their project is been made looking after the situation of rivers which are filled with sewage and plastics wastes. Their project main aim is to reduce the labor and focus on automation. Government has implemented river cleaning projects like "Namami Gange" & "Narmada Bachao" where huge money is invested. Their project is cheap and automated so it is easier to use. Their project has an 80W motor and 85W battery which provides a runtime of 1hr 15min on paper.

Madhavi N.Wagh, Kashinath Munde "Design and Analysis of River Water Cleaning Machine"[6], their project focuses on improving the government efforts for cleaning the Lakes and River.Their project is automated which can be operated remotely. Without being on the machine their machine can clean the river with some commands to be given through a controller.Arduino board, Bluetooth Model, Battery's, Solar Panel, Blucontrol Android APP, DC Motors, Conveyor Belt. As it is powered by solar energy, they achieved their objective of automation for a small scale cleaning purpose.

Ganesh S. Patil, Rahul A. Pawar, Manish D. Borole, Shubham G. Ahire, Ajay L. Krishnani, Amit H. Karwande"Review Paper on Drainage Water Cleaner Machine"[7],they made a machine which will clean the drainage without human intervention and also prevent blockage in the drain. Their project is solely focused on solid waste management. The flow of the drain is necessary especially during the rainy season there is a high chance of drains getting block. Due to the floating wastes such as polythene bags, plastic bottles, papers, leaves etc. so their machine needs to be installed at the drainage openings where with some conveyor and bucket type mechanism collects the waste automatically and dumps it in to the collecting tank or dustbin.

Pranay Agrawal, Bishakh Bhattacharya "Aquatic Multi-Robot System for Lake Cleaning"[8], this project is an automatic aquatic vehicle, which can be remotely operated for cleaning the water bodies.Their project is based onnovel algorithm, which is used for navigating and waste removal strategy. They have designed this robot in such a way that they do not need much of human intervention and do not need any maintenance. This robot not only can be used for lake cleaning if they did certain changes in their mechanism and algorithm it can detect and catch fishes

Table I
Comparative table of the various implemented systems

Authors	Key Implementations	Mechanism	Advantage
Harshvardhan Baria, Mackwan Akash, Nirav Makwana, Raj Parmar, Mr. Sharad Chhantbar "Review Paper On Automated Drainage Cleaning System"[1],	Developed a System which collects the floating waste from the drainage without any	Simple mechanism comprising of motor, screw conveyer and sprocket,	Minimizes human effort . Prevents drain blocking.

	manual intervention.		
Manoj Rathod, Vasant Pund, Rahul Pungle, Jiwan Rathod "Automatic Floating WasteCollector"	Developed a machine to minimize the manual effort to clean the lakes and use automated system.	Amalgamated Mechanical, Electronic and Computer processes into one machine, which cleans floating wastes.	This type of mechanism is simple in design also easy to use.
Mahto Ravishankar kumar Ravindrabhai, Dehadray Vaibhav, Kaka Smit, Prof. Ankur Joshi "Design And Fabrication Of River Waste Collector"[3],	A boat was customized as a floating waste collector	Various type of fins are used in combination with chain and sprocket assembly and two rims	Simple System
Prof. N.G.Jogi,Akash Dambhare, Kundan Golekar, Akshay Giri, Shubham Take "Efficient Lake Garbage Collector By Using Pedal Operated Boat"[4],	They have made a pedal boat with a conveyor system on it which collects and dumps the floating waste into the tank.	This task concentrated on demonstrating, structure and control of pedal worked pontoon, with accentuation on lightweight, compact apparatuses.	Low maintenance Easy replacement and installation of various parts
Sheikh Md, Shahid Md Rafique, Dr. Akash Langde"Design and Fabrication of River Cleaning Machine"[5],	Their project is been made looking after the situation of rivers which are filled with sewage and plastics wastes.	Use cost effective components 80 W motor and an 85 W battery providing a runtime of 1.15hr	Reduction in labour involved and automated system
Madhavi N.Wagh, Kashinath Munde "Design and Analysis of River Water Cleaning Machine"[6],	Their project focuses on improving the government efforts for cleaning the Lakes and River.	Their project is microcontroller base which can accept command remotely	Solar powered .
Ganesh S. Patil, and et.al "Review Paper on Drainage Water Cleaner Machine"[7	They developed automatic drainage cleaner capable of preventing drain	Conveyor and bucket mechanism used to carry on solid waste management along with the facility to dump the	

	blockages	waste in collecting tank.	
Pranay Agrawal, Bishakh Bhattacharya "Aquatic Multi-Robot System for Lake Cleaning"[8],	Developed automatic aquatic vehicle, with remote controlled facility for cleaning the water bodies.	A robot which is capable to removing the waste and navigating with the help af a developed algorithm and needs minimal maintenence	Apart from being used to clean the lakes this can be used to collect fishes too.

III. CONCLUSION

Thus we conclude that lots of work has been done with systems being developed which have mechanical system complemented by electrical ,electronic and computer systems.Some systems are microcontroller based. Some system were more of a modification like converting the boat into a cleaning machine. Some systems have been solar powered while some are battery powered .We focus on developing a small river cleaning machine which can be easily fabricated ,requires a small space and can be utilized to clean small river bodies too.
with electronic and By studying these literature reviews, we conclude that there have been done many studies in the

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