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DESIGN & FABRICATION OF RIVER CLEANING SYSTEM

Prof. Ketan.V.Dhande
Mr.Abhijeet.M. Ballade[1], Mr. Vishal.S. Garde[2], Mr.Akash.S. Lahane[3] and Mr.Pranav.V. Boob[4]
[1,2,3,4] *Guru Gobind Singh College of Engineering & Research Centre, Nashik.(MS) India.*

Abstract -India is holey country & during lots of festival like ganesh visarjan, navratri durga puja & mainly Siahnsth kumbhmela 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 dispose from the water body. The river cleanup machine works on hydropower to extract waste water debris, plastics & garbage from Godavari river at Nashik.

Keywords- water debris, plastic, garbage, pollution, hydro power, river cleanup machine.

I. INTRODUCTION

The “River cleanup machine” used in that places where there is waste debris in the water body which are to be removed. This machine is consists of waterwheel driven conveyer mechanism which 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 surface debris 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 & beauty of Godavari River. The some photo graphs are shows the water pollution near Godavari River, Nashik.

Fig. 1. Water pollution of Godavari River at Gadge maharaj bridge Nashik.

Fig. 2. Water pollution of Godavari River at Gandhi Talav Nashik.

1.1. Problem statement:

1. The statement of the project is "Design & Fabrication of River Cleaning System" to remove the waste debris, plastic waste & garbage from Godavari River, Nashik. This causes harm to acoustic & human life.
2. To achieve clean water body for reduction of river pollution & to achieve the beauty of Godavari River by clean water bodies.

1.2. Objective:

1) To reduce the pollution in water bodies.
2) To overcome the difficulty of removing waste particulate floating on water surface.
3) To maintain the automation during working towards cleaning River.
4) To perform the fast & reliable operation during cleaning River.
5) Improve the water quality of a Godavari stream or river.
7) To work for society for clean up a section of a stream or river.
8) To record the amount of garbage removed from the waterway & give solutions to local Nashik Municipal Corporation, reduce the pollution of Godavari.

II. METHODOLOGY

In this section, we provide a detailed description about proposed approaches to outlier detection. Methodology & steps to solve the problem given below flow chart shows the sequential operation/steps that will be performed during the project process.

Task	1	2	3	4	5	6	7	8
Field observation								
problem identification								
Literature survey								
Objectives & Problem statement								
Conceptual Model Development								
Project Design								
Material Purchase								
Production Process sheets								
Manufacturing								
Model Testing								

Fig. 3. Methodology & steps to solve the problem.

Methodology shows systematic way to do work. It is standard process of describing process, how it is done in simplest manner. Design consists of application of scientific principle, technical information, and imagination for development of new mechanism to perform specific function the total design work has been split into two parts.

1. System design
2. Mechanical design

III. CONSTRUCTION

Component used for the construction of River Cleanup Machine are as follows:
1. Water wheel- The waterwheels are rotate by using hydropower & this converted the kinetic energy of the water to mechanical energy to drive shaft to conveyer
2. Shaft: - The shaft is the main rotating component on which the conveyor is to be mounted.
3. Pedestal Bearings:- The pedestal bearing is made in use to give rotary motion & to support the shaft. The pedestal bearing are mounted on M.S angle frame.
4. Belt drive: - Belt drive is a transmission system of the water cleanup machine. Here we had use two belt system. First is cross belt & another is open belt Drive.
5. Conveyor:-The conveyor is mounted on the two shafts such a way that it collects the waste debris to be lifted upwards and collect inside the machine.
6. Bevel Gear:- Which transfer the power from waterwheel to second garbage handling conveyer.
7. M.S Angle Frame: - The M.S angle is made in use to form the main body of the machine. It supports all the components of the system.

IV. WORKING

In this project the main aim of this machine is to lift the waste debris from the water surface and dispose them in the tray. It consist arrangement of the conveyor which is placed on the shaft & bearings support; the shaft is coupled to the pedestal bearing and bearing is mounted on the M.S angle frame, the frame is welded and resembles the shape of slope facing machine part. Due to hydropower waterwheels are rotate; this power is transmitted to conveyer system by means of belt drives. As the conveyer is move, it collects the water debris, waste garbage &plastics from water bodies.

As the machine is placed in the water the waste debris in water will get lifted and it moves in upward direction. As the waste debris reaches the upper extreme position it will get dropped in the tray. Hence this will result in cleaning of water surface and safe collection of waste debris from water. After collection of all wastage debris the second conveyer is convey it out of the river. The River Cleanup Machine utilizes long floating barriers which is being at an angle capture the plastic, making mechanical extraction possible.Fig.4 shows the Concept drawing of river cleanup system.

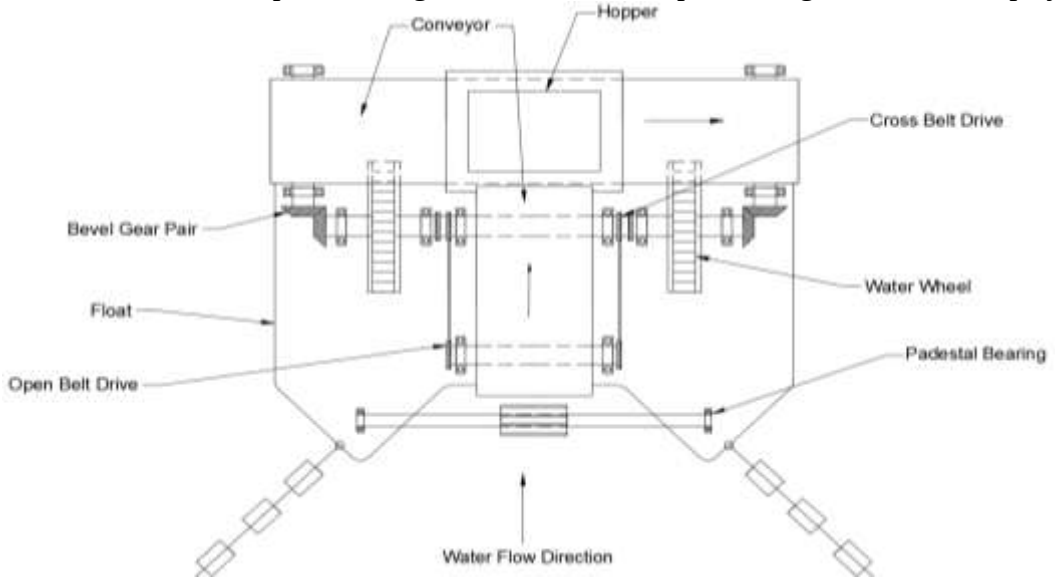

Fig. 4. Concept drawing of river cleanup system.

V. ADVANTAGES AND APPLICATIONS

5.1. Advantages:-

1) It is a non-conventional river cleanup system.
2) It's initial & maintenance cost is low.
3) Skill Worker not required to drive the system self propel.
4) Proper timing of mechanical control operations can improve control and reduce the spread of propagates.
5) Environment friendly system.

5.3. Application:-

1) It is applicable to reduce water pollution in rivers, ponds, oceans.
2) It is useful to reduce the environmental marine pollution at Godavari river, Nashik.


3) It is also useful in fishery plant to collect dead fishes & solid impurities from waste water.
4) It is useful to remove the sediments present in swimming pool to keep it clean.


VI. CONCLUSION

While concluding this report, we feel fulfill lots of practical experience during the manufacturing schedules of the working project model. We are happy that our knowledge has been used for social welfare. Although the design criterions with problems definitions which, however were overcome by using references & teachers guidelines. The choice of raw materials helped us in machining of the various components to very close tolerance and thereby minimizing the level of balancing problem. We will do efforts during machining, fabrication and assembly work of the project model to fulfill the need of project.

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