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Research Paper

REVIEW OF RIVER CLEANING SYSTEM

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Abstract

The water pollution is main problem in rivers, ponds and water bodies near Godavari River at Nashik. Due to polluted water many skin disease 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 from Godavari River at Nashik. 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 to reduce water pollution.

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

1. INTRODUCTION

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. 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. The "River cleanup machine" used in that places where there is waste debris in the water body which are to be removed. It consists of Belt drive mechanism to lifts the debris from the water. From this project we hope to clean the surface water debris from bodies. Some photo graphs are shows the water pollution near Godavari River, Nashik.

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

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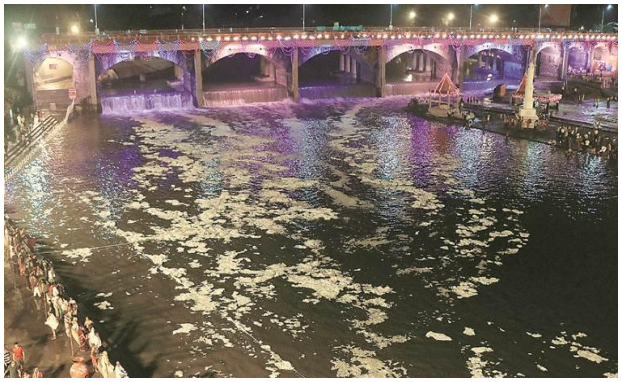

Fig. 2. Water pollution of Godavari River at Gandhi Talav Nashik.

1.1. Problem statement:

The statement of the project is "design & fabrication of river cleaning system" to remove the waste debris, plastic & garbage from Godavari River, Nashik

1.2. Objective:

1. To achieve clean water body for reduction of river pollution
2. To achieve the beauty of Godavari River by clean water bodies.
3. To overcome the difficulty of removing waste particulate floating on water surface.
4. To work for society for clean up a section of a stream or river.

2. 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

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3. 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.

4. WORKING

This project is mainly consist of belt conveyor arrangement 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.

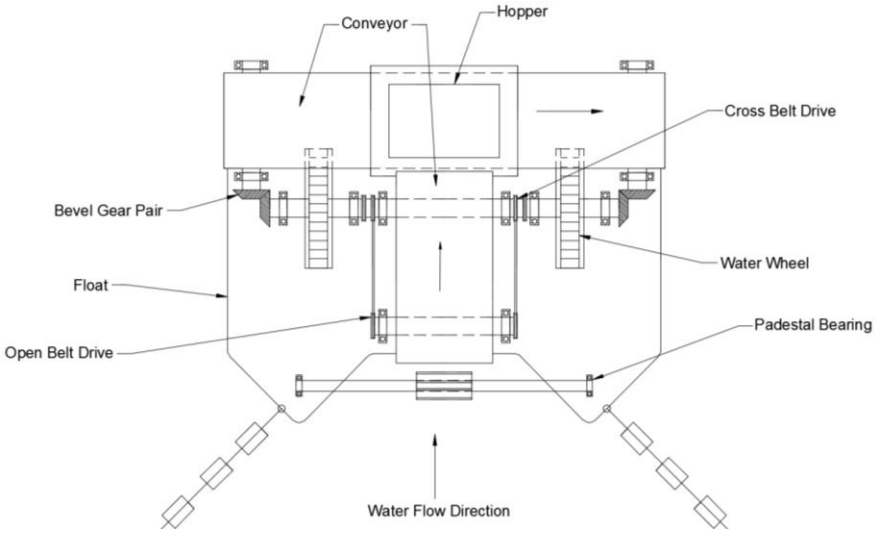

Fig. 4. River cleanup system layout.

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5. ADVANTAGES AND APPLICATIONS

5.1. Advantages:-

1) It is a non-conventional river cleanup system.
2) Initial & maintenance cost of the system is low.
3) System is self propel using hydro power.
4) Environment friendly system.

5.3. Application:-

1) It is useful to reduce the environmental marine pollution at Godavari River, Nashik.
2) It is also useful in fishery plant to collect dead fishes & solid impurities from waste water.
3) It is useful to remove the sediments present in swimming pool to keep it clean after some modification.

6. CONCLUSION

While concluding this paper, we fulfill lots of practical experience during the design & manufacturing of the river cleaning machine. This machine is successfully work & removed the waste debris, plastic & garbage from river, Nashik to achieve clean water body for reduction of river pollution. With the working these machines it achieves the beauty of Godavari River. This machine reduces the difficulty of removing waste particulate floating on river water. While working with this project we are happy that our work for social welfare.

References

[1] Basant Rai,pollution and conservation of Ganga river in modern India , International journal of scientific and research publication Volume-3,April 2013,ISSN2250-3153,PP 1-4.
[2] Khurmi R. S., Gupta J.K., A textbook of machine design, first edition, S. ChanPublication,1979.
[3] Priyam Das ,Kenneth R. Tamminga,The gangas and the GAP,An Assesment of effect to clean a sacred river,sustainability 2012,1647-1668,pp. 1647-1668.
[4] Rajendra Patil,Rahul Itnare,Sagar Ahirrao,Amol Jadhav & Ajay Dhumal, Study of river harvesting & trash cleaning machine, International journal of innovative research in science & Engineering,Vol.No.2,March 2016,pp.422-431.
[5] Wang Jianlong, Point sources of pollution: local effect and its control,Volume II technology for water pollution control, Tsinghua university,Bijing,China,Encyclopedia of life support system(EOLSS0,pp.1-10.
[6] Wolfgang Radhuber, Trashrack cleaning the past-the present-the future ,15th International Seminar on hydropower plant- Hydropower plant in context the climate change,Vienna,2008,pp.1-16.
[7] Y. Sharma, Richard Helmer & Lvanildo Hespanhol ,case study I-The Ganga,India,United nations environment programme,water supply & sanitation collaborative council and world health organization WHO,1997.

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The project emphasizes on design & construction of river cleaning mechanism. The system is successfully able to clean the floating solid waste over the river surface more efficiently. This system works towards its social aim of cleaning the rivers & other water bodies. It simulates the conventionally used mechanisms of using conveyors in its working principles but have an intimidating modification of Air Tube Piping Guider mechanism for improving its efficiency. The conventional & generally used method of cleaning or more precisely collecting the floating waste are manual or by mea Tyler Tjomsland/Spokesman Review/Associated Press. This story was originally published by High Country News. It appears here as part of the Climate Desk collaboration.Â Water is drawn up from below and into a filtration system that pumps it through tanks filled with ground-up walnut shells, which capture the PCBs in their absorbent pores. The PCBs are then washed from the walnut shells and stored in tanks. The cleanup at Kaiser Trentwood is part of a widespread effort in the watershed to exorcise the PCB demons of the past.Â Cleaning up PCBs in the Spokane River isnâ€™t simply a matter of cleaning up a toxic past. PCBs are still inadvertently produced, and cleaning them up forces regulators and polluters to grapple with knotty environmental paradoxes. The RIVER CLEANING system, by means of the rotary movement of special floating devices anchored to the river bed and their particular transverse arrangement compared to the river, conveys all floating waste in transit to a single point, where a collection system can then be placed. TECHNOLOGY. The plant does not interfere with river traffic. ECOFRIENDLY. It does not interfere with the life of the fauna.