

## DESIGN AND FABRICATION OF AUTOMATIC DRAINAGE WASTE REMOVAL EQUIPMENT: A REVIEW

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**Abstract-** This paper focuses more on Automation of Drainage waste removal equipment. There is a problem of blockage of drainage, to overcome this problem automation of the system is necessary. Our concept is to use this in efficient way to removal of solid wastages from water. The system only requires water flow to operate turbine. In this paper we working on improving drainage system of small town by comparatively study of different open drainage system.

**KEYWORDS:-** Drainage system, Automation, Solid waste

### INTRODUCTION

Water running through a water drainage system mostly carries along waste materials most which are non biodegradable which cause flooding as well as climate change. Overflow of water drainage system occurs when there is a blockage of drainage system. This blockage forces the water to find its way apart from the mapped out drainage system. Hence the running water spills over the horizontal height of the drainage systems spreading to regions alongside the drainage system, It causes the problems like pushing down of structures such as fences, water logging of farm lands and residential building, etc.

The impurities present in water can cause hazardous and harmful diseases which can be very harmful to all living beings. As long as the draining system is considered the function of the main drainage system is to collect, transport and dispose of the water through an outlet. Impurities in drainage water can be only like empty bottles, polythene bags, papers, plastic, domestic waste, etc.

The problem such as Environmental pollution and spreading of viral diseases are controllable. Automation of Drainage Cleaning System would reduce the risk of various diseases spread due to blockage of waste. This Drainage Cleaning system will clean the solid waste at the surface of drainage which would allow the flow of water. The device is place across drain so that only water flow through lower grids, waste like bottles and all solid waste etc floating in drain are lifted by teeth which is connected to chain. This chain is attached to gear and driven by small turbine. When turbine rotates then the chain starts to circulate mesh bucket to lift up . The waste materials are lifted by mesh bucket and are stored in waste storage tank.

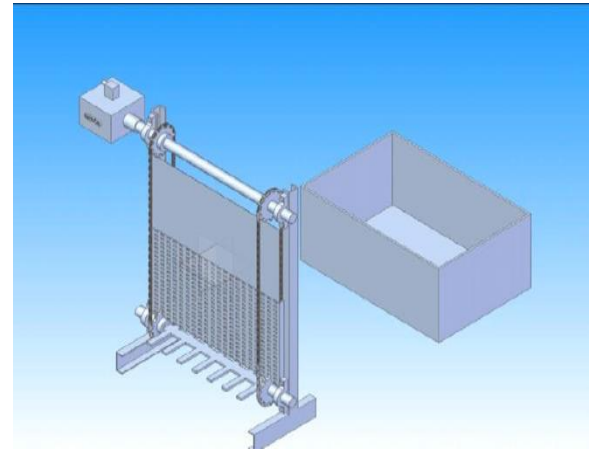


Fig1: cad model waste water cleaner [6]

### LITERATURE SURVEY

S D Rahul Bharadwaj, et.al. [1] Proposed with the automatic cleaning of waste water in order to prevent global warming and melting of glaciers. The results emphasize the need of waste water treatment plants, through which the water is treated before suspending in rivers. Firstly power is generated and that power is used for waste water cleaning process.

Elangovan K, et.al. [2] Reviewed about drainage cleaning to replace manual work to automated system because manually cleaning system it is harmful for human life and cleaning time, is more so to overcome this problem they implemented a design "Automatic drainage water pump monitoring and control system using PLC and SCADA". PLC and SCADA were designed. In this project to use efficient way to control the disposal of wastage regularly, treatment of disposal in different way toxic and non-toxic gases. PLC controller from Siemens was used in the treatment system of drainage wastewater control by the stepper motor, compressor, gas exhauster, pressure valve and the liquid level, flow and other analog variables to achieve automatic control of sewage waste water treatment.

Ganesh U L, et.al. [3] showed the usage of mechanical drainage cleaner to replace the manual work required for drainage cleaning system. Drainage pipes are very dirty. Sometimes it is harmful for human life while it is need for cleaning drainage system. To overcome this problem, they implemented a mechanical semi-automatic drainage water cleaner and so the water flow is efficient because of regular filtration of wastages with

the help of that project. Different kinds of environment hazards reduced with the help of Drainage system machine.

Dr .k.kumaresan [4] explained manual work converted to automated system. Drainage pipe using for disposal and it may be loss for human life while cleaning the blockage in the drainage pipes. To overcome this problem they implemented "Automatic Sewage Cleaning System". They designed their 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, machines, and materials and money. They made their project economical and efficient with the available resources. They used automation technology related with his application of mechanical, electronics, computer based systems to operate and control production.

R.Sathiyakala, et.al. [5] explained E bucket (electronic bucket) use for drainage cleaning system because E-bucket lifted a sewage and used evaporation treatment for this sewage wet sewage was converted into dry matters, with the of ARM board (ARDUINO) this process was performed. After this process they were add this waste a government bank without any kind of affection of the bacteria.

Nitin Sall, et.al. [6] explained flow of used water from homes, business industries, commercial activities is called waste water. 200 and 500 liters wastage water are generated each person every day. So using waste water technology that removes, rather than destroys, a pollutant in a drainage system.

Gregor Burger, et.al. [7] described the concept and software design of an innovative general purpose platform for network based model development and look at some of crucial computational design issues. They developed the improvement in the design of very fast, easy to use, easy to integrate and extensible general purpose simulator platform. It was running up to 40 times faster than its MATLAB based predecessor and allowing it to be flexibly applied. They included features such as the hot-start mechanism and the extension interfaces have proven to be extremely useful when linking city drain 3 as a sub-model into larger software project.

NDUBUISI C. Daniels, et.al. [8] showed the Drainage system cleaner machine used to remove garbage and sewage automatically which helped to protect the environment from different kinds of environmental hazards. The drainage system cleaner has three major parts which are the Propeller, the Cleaner and the Pan all makes up for its effective functioning.

## CONCLUSION

Our literature review highlights the day to day advancement in the drainage cleaning system. Many specific studies have been carried out and categories such as semi automatic drainage cleaning system and its automation have been studied to a great depth. We focus more on making the economical and mobile system in the drainage. In the treatment of drainage Waste water control by the small turbine, roller chain and sprocket, lifter and the collecting bin to achieve automatic control of solid waste removal system.

1. The system can move in the drain to collect the floating waste so as to reduces human effort, time, maintenance and operation cost
2. The cleaner functioned move effectively during the heavy rains which had more flow of running water with solid waste and high velocity.

## REFERENCES

- 1.S D Rahul Bharadwaj, Shraddha R Jogdhankar, "Automatic Wastewater treatment process to reduce global warming" International Journal of Environmental Science: Development and Monitoring, Vol No- 2 (2013)
- 2.Balachandra,et.al."Automatic Drainage Water Pump Monitoring and Control System Using turbine" International Journal of Innovative Research in Technology, Vol No- 1, 2014.
3. 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.
4. Dr .K.Kumaresan etal., "Automatic Sewage Cleaning Equipment", International Conference on Explorations and Innovations in Engineering and Technology , 2016.
5. R.Sathiyakalaet.al., "Smart Sewage Cleaning System" International Journal of Innovative Research in Computer and Communication Engineering, Vol No- 4, February 2016.
6. Nitin Sall, et.al., "Drain Waste Water Cleaner", Global Journal of Researches in Engineering: J General Engineering Vol No- 16, 2016.
7. Gregor Burger, et.al, "Designing and Implementing a Multi-Core Capable Integrated Urban Drainage Modelling Toolkit: Lessons from CityDrain3", Advances in Engineering Software 100, 2016.
8. NDUBUISI C. Daniels, "Drainage System Cleaner A Solution to Environmental Hazards", International Referred Journal of Engineering March 2014.