

# Cost Effective Waste Water Treatment for Rural Villages

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**ABSTRACT**— Now-a-days almost all the processes are being automatized but the drainage cleaning system or we called the partial waste water treatment in our country is still completely manual. The proposed concept in this paper is to automatize the existing manual drainage cleaning system that is existing in our country. The “Automatic Drainage Cleaning System” is intended to be used in the drains and sewer lines which are clogged by the plastic and floating debris. The solution proposed in this paper is to design a vehicle which is capable of collecting the plastic and floating wastes. This vehicle is based on concept of ‘Mr. Trash Wheel’. The system consists of raspberry pi which acts as the brain by controlling the entire process and wastes will be collected using a conveyor mechanism. Two motors will be used for the motion of system and for conveyor mechanism. The vehicle moves along drains in water collecting the wastes into a bin and further the impurities inside the water will filter through the basic sponge filter that will clean the water in partial amount upto for plantation.

**Keywords**— Waste water treatment, raspberry pi

## I. INTRODUCTION

Hygienic surroundings are needed to maintain the health of a person. Now-a-days drainages are most important in keeping the surroundings clean. But the drains and sewers in most of the places are being left unsupervised. Plastic wastes have become a very big threat to society. Most people after the usage throws these plastic bags and other plastic wastes in drains instead of disposing them properly.

Due to these plastic wastes the drains will be clogged and creates many health related problems. Once or twice in a month the sewage workers have to come and clean them manually.

While cleaning such drains without proper equipment many are losing their lives. So, a proper automated system is need for the cleaning of these drains. Most systems in the world today are automated. Almost 1.2 million workers are involved in sanitation works. The working conditions of these sanitary workers have remained unchanged over years.

Apart from the social atrocities that these workers face, they are exposed to many health problems by virtue of their occupation. This can be prevented through engineering, medical and legislative measures. While the engineering measures will help in protecting against exposures, the medical measures will help in early detection of the effects of these exposures. This can be partly achieved by developing an effective occupational health service for this group of workers. So, the engineering solution to this problem is discussed in this paper.

## II. WORKING

In this proposing system we are going to clean the water not that much but only up to partial amount means we will move out the hard waste like plastic, wood, stones etc. After that we will also provide one more filter inside it, that will filter the water in one more process. According to that filter, it will suck the smaller impurities and change the colour of liquid like as the original water color. Then we can use this water in plantation area and by doing this we can reduce the wastage of water.

For major impurities we will be placing the net and that net will be helpful to filter the strong impurities like plastic. After that that impurities will wheeped through the DC gear motor which further controlled through the controller. After this phenomenon, one filter is placed inside the tank that will be based on the foam setup.

### III. BLOCK DIAGRAM

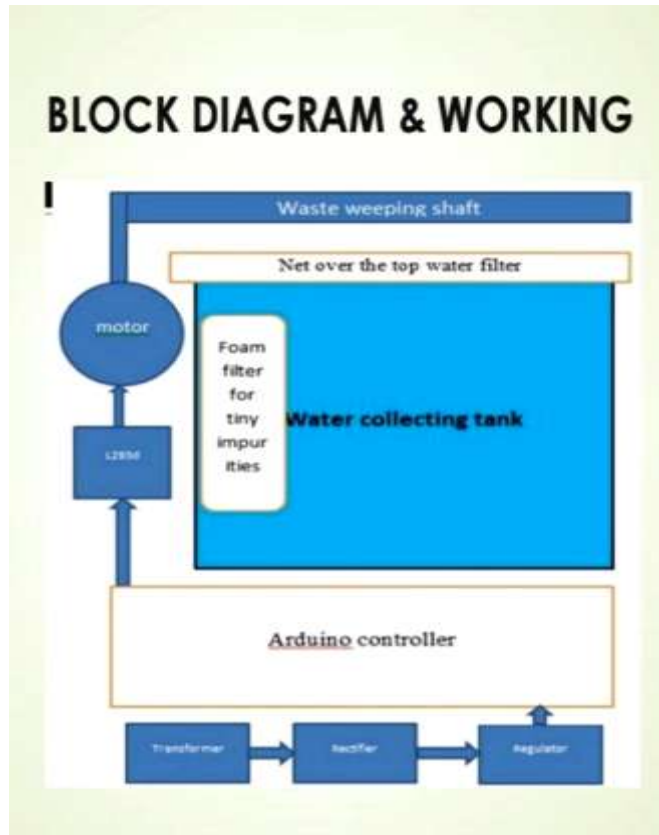


Fig 1: Block Diagram of Proposed System

#### COMPONENTS USED:

- Water tank
- DC gear motor
- Wheeping shaft
- Transformer
- Rectifier
- Regulator
- Controller
- Foam filter
- Motor driver IC
- PCB
- Wire

#### IV. EXISTING SYSTEM

Processes commonly used include phase separation (such as sedimentation), biological and chemical processes (such as oxidation) or polishing. Further types of wastewater treatment plants include agricultural waste water treatment plant and leachate treatment plants. The main by-product from wastewater treatment plants is a type of sludge (for example sewage sludge) which is usually treated in the same or another wastewater

treatment plant. Biogas can be another by-product if anaerobic treatment processes are used.

Some wastewater may be highly treated and reused as reclaimed water. The main purpose of wastewater treatment is for the treated wastewater to be able to be disposed or reused safely. However, before it is treated, the options for disposal or reuse must be considered so the correct treatment process is used on the wastewater.

The treatment of wastewater is part of the overarching field of sanitation. Sanitation also includes the management of human waste and solid waste as well as storm water (drainage) management. At the global level, an estimated 52% of municipal wastewater is treated. However, wastewater treatment rates are highly unequal for different countries around the world. For example, while high income countries treat approximately 74% of their municipal wastewater, developing countries treat an average of just 4.2%. Wastewater that is discharged untreated into the environment can cause water pollution.

## V. RESULT & CONCLUSION

The project provides a proper solution to an underlying problem of drainage cleaning. This system is far better than the existing systems and reduces the risks involved in the drainage cleaning. The operation of this system is simple and it also provides flexibility. Cost of the system changes based on the extent of the operation of vehicle. So the project “Automatic drainage Cleaner” is designed to provide a system that is economical and helpful to remove water impurities like plastics, trashes, water debris which is floating on drain water surface. Use of this machine will reduce the man power considerably. It can also be used in fisheries in collection of dead fishes.

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