

Design and Fabrication of Automated Drain Cleaner

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Abstract:- This project is about replacing the manual work in drainage cleaning by automation plays a vital role in all industrial applications. Yet, the proper disposal of sewage from industries is still a challenging task. Drainage pipes are been used for the disposal and unfortunately sometimes there may be loss of human life while cleaning the blockage in the drainage pipes. In order to overcome the problems in manual drain cleaning, we are implementing "AUTOMATIC DRAIN CLEANING SYSTEM", to clean and control the drainage level.

1. INTRODUCTION

Automatic drainage water cleaning and control system using auto mechanism proposed to overcome the real time problems. With the continued expansion of industries, the problem of sewage water must be urgently resolved due to the increasing sewage problems from industries of the surrounding environment. Our proposed system is to cleaning and control the drainage level using auto mechanism technique. Auto mechanism is the major controlling unit and the drainage level a monitor by municipal. In this system we used hand wheel, chain, driver, bucket, frame.

2. WORKING PRINCIPLE

Automatic drainage water cleaning and control system using auto mechanism proposed to overcome the real time problems. With the continued expansion of industries, the problem of sewage water must be urgently resolved due to the increasing sewage problems from industries of the surrounding environment. Our proposed system is to cleaning and control the drainage level using auto mechanism technique. Auto mechanism is the major controlling unit and the drainage level a monitor by municipal. In this system we used hand wheel, chain, driver, bucket, frame.

2.1. DESCRIPTION

Cleaning of drains/gutters has always been a problem. Labors cleaning gutters & drain seems unethical and also leads to a high risk of them catching infections or poisoning due to large amounts of waste/chemicals in them. Also throwing of bottles/plastics and other such objects into the gutters lead to narrowing and eventually blockage in gutter

flow. This leads to overflow in many cases. So here we provide a fully automated drain gutter cleaning mechanism to tackle these modern day gutter jamming issues. Our system uses an automated gutter/drain cleaning system that lets fluids flow through it but catches large solid waste like bottles & plastic and accumulates it.

So gutter cleaners need to just clean these gutter cleaning systems installed at points instead of cleaning entire gutter floors. Our system consists of metal teeth based jaws that wait at the bottom of the mechanism. The vertical frame bed is used to let liquid flow but catch all solid waste. The system consists of a filter basket on top of it. After particular time intervals the jaw lifts up using a motorized shaft which is connected using a chain to the jaws. It then reaches the top and turns upside down to dump the solid waste. Now after dumping the waste, the motor rotates again to bring the jaw again to the bottom position to collect more waste. The system is a very efficient way to cleaning gutters & drains.

2.2. PROCESS INVOLVED

- If we turn on motor switch or if we supply current to the motor the motor starts to rotate.
- The rotary motion of the shaft is connected to the top shaft by chain and sprockets which is placed on taper bars.
- From top shaft that motion is transferred to the bottom shaft by using sprockets and chains.
- The teeth which is used for lifting waste from drainage is placed or attached between two chains which are on top and bottom shafts.
- The dust bin which is used for collecting all the waste is attached to vertical bars behind the chains.
- There will be a mesh between the chains and dust bin which act as a barrier for stopping the waste without floating.
- When we switch on the motor the two shafts starts to rotate. Thus the teeth also starts rotate.
- The teeth enters into water while rotating when it is coming up it also lift the waste present on the water along with it.
- It carries the wasted along with it and finally dumps that waste in dust bin during rotation.

- The process will continue in vice- versa.

3. ADVANTAGES

- The Drainage cleaning machine is more efficient in the technical field.
- Quick response is achieved.
- Simple in construction.
- Easy to maintain and repair.
- Cost of the unit is less when compared to the other equipments.
- Comparatively the operation cost is less.
- Continuous operation is possible without stopping.

4. DISADVANTAGES

- Additional cost required to implement this system in water bodies

5. CONCLUSION

This project work has provided us an excellent opportunity and experience, to use our limited knowledge. We gained a lot of practical knowledge regarding, planning, purchasing, assembling and machining while doing this project work. We feel that the project work is a good solution to bridge the gates between the institution and the industries. We are proud that we have completed the work with the limited time successfully. **The “DESIGN AND FABRICATION OF AUTOMATED DRAIN CLEANER MACHINE** “system

is working with satisfactory conditions. We can able to understand the difficulties in maintaining the tolerances and also the quality. We have done to our ability and skill making maximum use of available facilities. Thus we have developed an “DRAINAGE CLEANING MACHINE

6. SCOPE OF PROJECT

As the project has been based on the baseline to make integration of the benefits for human health, societal concerns and national cleanliness policy. Therefore it covers many section of proportionate benefits to the all sphere of our present life. Explaining all the present benefits in respective category:

6.1. FOR ACADEMICS

- Drainage Cleaning System is basically a agglomeration of the basic mechanical components that we have gone through regressively during out past four year of curriculum.
- All the basic components that majorly consist of the Chain drives, Bearings, Welding, Turbine etc.,
- components are finely integrated to build to structurally simple project.
- Moreover the last add on the project to give an edge effect harnessing of the flow energy of the drain gives the project the much needed future scope of exploitation of the renewable resource

6.2. FOR SOCIETY

- In a modern society where luxury has become a necessity in the urban and rural hub, there lies a section of the population who still lives on meager just enough to satisfy its hand to mouth needs.
- Sanitations is one of the very basic amenities required for the basic living of a man and providing with such a technological and economical instrument which can change the pathetic sewerage condition of the town and cities of mediocre India.
- With such a potential instrument of employment generation in the society through industry co-operation, this product land you in the win-situation for the people.

6.3. FUTURE SCOPE OF THE PROJECT

- The projects Drainage cleaning system definitely serves the many dimensions the human needs and definitely presents a bright future aspect in this domain.
- With technological advancement this core-mechanical project can be revolutionized to include the technology like GSM etc., to make the working of the Municipal Boards of the cities more viable.
- The project can be incorporate the automatic dustbin lifting system and hence the project can be tech-abled