

Project synopsis on
“DRAINAGE CLEANING MECHANISM”

Sponsored by
Karnataka State Council for Science and Technology
46S_BE_2259

**VSM's SOMASHEKHAR R. KOTHIWALE INSTITUTE OF
TECHNOLOGY, NIPANI-591237**

Department of Mechanical Engineering

Submitted By

Mr. SOURABH NAMDEV KUMBHAR

USN: 2VS18ME012

sourabhkumbhar5802@gmail.com (Leader)

9449646880

Mr. OMKAR RAMDAS YADAV

USN: 2VS18ME008

omkaryadav5620@gmail.com

8088093130

Mr. ABHISHEK ANIL BONGARDE

USN: 2VS18ME001

abhishekbongarde9@gmail.com

8105494438

Mr. SHAILESH SANJAY SHRIKHANDE

USN: 2VS19ME008

shri.shailesh2001@gmail.com

8105120375

UNDER THE GUIDANCE OF

Prof. AMAR V. NAVALIHALKAR B. E, MTech.

Asst. Professor, Dept. of Mechanical Engineering

Email- amarvn2145@gmail.com **Mob no.-** 9449108004

“DRAINAGE CLEANING MECHANISM”

INTRODUCTION

The proposed concept is to replace the manual work in drainage cleaning by drainage cleaning mechanism system. Now-a-days even though mechanical drainage plays a vital role in all domestic and industrial applications in the proper disposal of sewages from domestic, industries and commercials are still a challenging task. Drainage pipes are using for the disposal and unfortunately sometimes there may be loss of human life while cleaning the blockages in the drainage system.

Present world is of automation, as human being is moving forward in each and every field it has become necessary to implement machinery in replacement to human intervention. This project deals with innovative concept of automation in drainage cleaning system. Presently most of garbage & drainage cleaning work is carried out by human workers but by considering ethical values we have to move towards automation or mechanization of this cleaning work.

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. The waste and gases produced from the industries are very harmful to human beings and to the environment. Our proposed system is to clean and control the drainage level using auto mechanism technique. auto mechanism is the major controlling unit and the drainage level is monitored by municipal. In this system we used motor, chain, driver, bucket, frame.

“DRAINAGE CLEANING MECHANISM”

OBJECTIVE

Based on the survey, the product objectives are the list of features that are taken into consideration. The following is a list of product objectives and how they will be obtained or measured to ensure that the goal of the project was met.

- To construct a machine which is easy to use and movements of parts occur smoothly.
- To build a device which is durable as it should be free from rust.
- To construct the light weight and a compact machine.
- To build a machine which is safe in all aspects as it does not harm the interior of drainage.
- Connected to the machine there will be a storage tank to store the waste collected from gutters.
- To make the proper usage of the waste materials.
- To design the machine in convenient manner to separate the solid waste.
- Machine should be economically design.
- Handling of machine should be easy.
- Project future quantities of waste generation in India.
- Investigate the potential for recycling.
- Estimate cost and revenue of managing generated

“DRAINAGE CLEANING MECHANISM”

METHODOLOGY

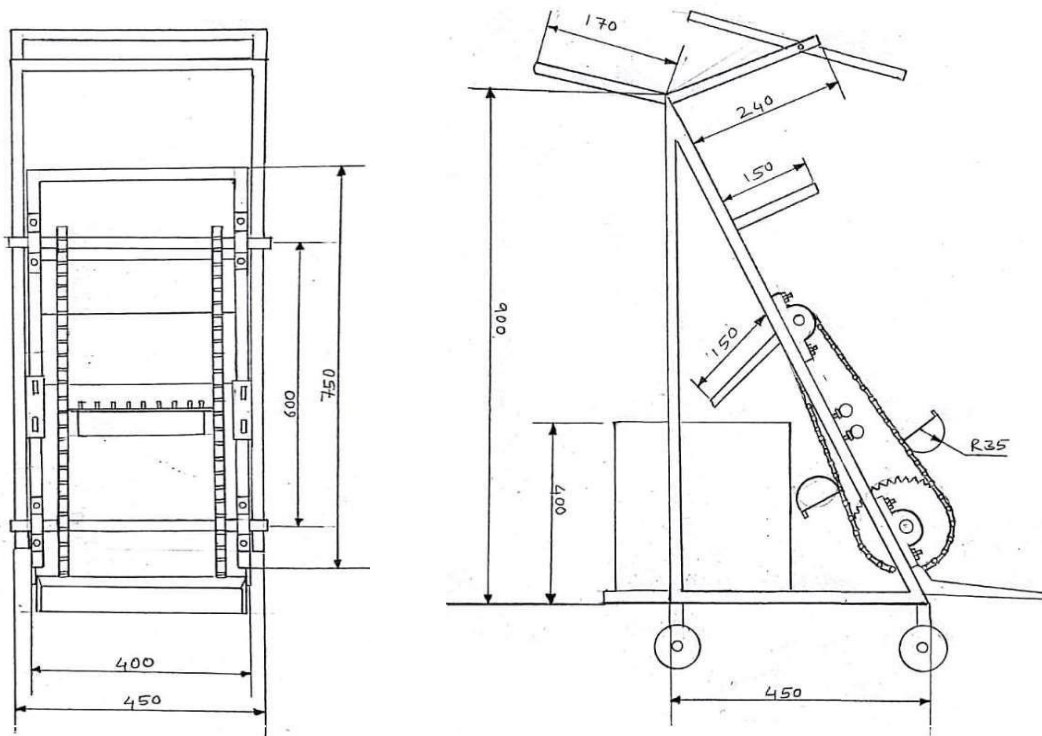
The device is placed across a drain so that only water flows through the lower basement. Floating waste like bottles, plastic cans, covers etc. is lifted by lifters which are connected to the chain. The chain revolves with the sprocket wheel which is driven by the motor. The energy provided to the motor is electrical energy. When the motor runs, the chain starts to circulate making the lifter to lift up. The waste material is lifted by lifter teeth and stored in storage or collecting bin. Once the collecting bin is full, the waste materials are removed from the bin.

If we turn on the 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 the top shaft, that motion is transferred to the bottom shaft by using sprockets and chains. The teeth which are used for lifting waste from drainage are 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 acts as a barrier for stopping the waste without floating. When we switch on the motor, the two shafts start to rotate. Thus, the teeth also start to rotate. The teeth enter into water while rotating; when they are coming up, they also lift the waste present on the water along with them. They carry the waste along with them and finally dump that waste in the dustbin during rotation.

“DRAINAGE CLEANING MECHANISM”



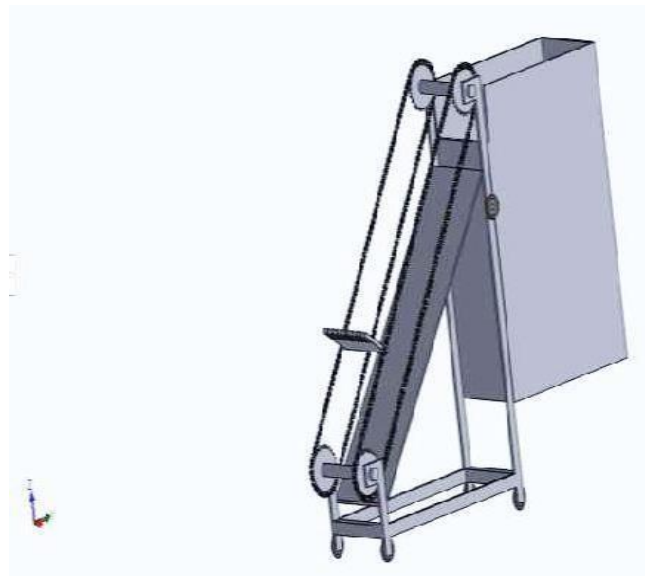
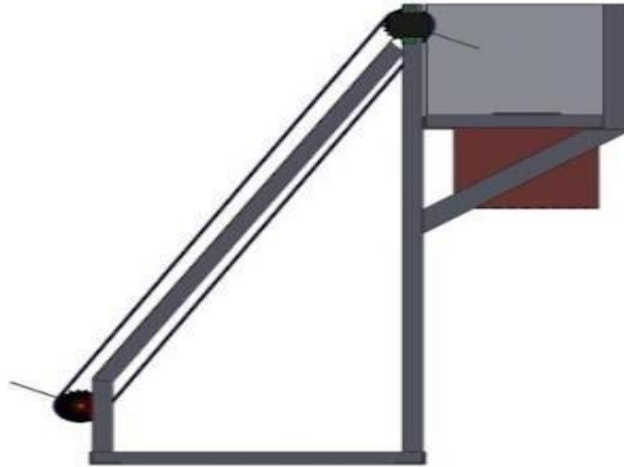
Basic Design of Automated Drainage Cleaning Machine



Front and Side View 2D Design of Automated Drainage Cleaning System

“DRAINAGE CLEANING MECHANISM”

WORKING PRINCIPLE



The device is placed across the drain so that only water flows through the lower grids, while waste like bottles, etc., floating in the drain are lifted by the teeth, which are connected to a chain. This chain is driven by a motor. When the motor runs, the chain starts to circulate, lifting the teeth. The waste materials are lifted by the teeth and stored in a waste storage tank. The lower shaft and wheel arrangement are used for transporting the machine from one place to another, as well as from one gutter to another. The upper shaft and wheel arrangement help in moving the machine during the cleaning process. This gutter and drain cleaner clean and move together for better cleaning of the drainage.

“DRAINAGE CLEANING MECHANISM”

Reduce, reuse, recycle. Reducing the quantity of waste that must be transported and disposed of should be a primary goal of all municipal solid waste management programs. Waste should be recovered at the source, during transport or at the disposal site. The earlier the separation, the cleaner the material, and, in the end, the higher its quality and its value to users. Incentives which integrate and foster the involvement of the informal sector— itinerant collectors, microenterprises, cooperatives—can be essential to improved waste minimization.

Construction

Step by step construction work of concept is given below.

- Initially fabricate two Nos. right angle triangle of 25mmX25mm square pipe with 500mm height and 300 mm base width.
- Join these triangles parallel to each other 500 mm apart.
- Mount shaft of 25 mm Diameter at top end and bottom end of inclines face.
- Mount two sprockets on each shaft.
- Connect sprockets with chain conveyor.
- On parallel chain conveyor attach teathed frame that will deep in garbage and collect solid waste.
- On top shaft mount high torque DC motor.
- On opposite side of inclined face i.e., right angle side put readymade container.
- On Bottom face of container net is fitted so that only solid waste is hold in container and all liquid will move down.

“DRAINAGE CLEANING MECHANISM”

CONCLUSION

In the treatment system of drainage, waste water control by the machine and the collecting bin to achieve automatic control of waste water treatment. Drainage from domestic and industries is treated through this project to meet the national emission standards, with stable operation, low cost and good effect. The cleaner functions more effectively during the heavier rains which has more volume of running water with garbage and high velocity. Risk of Labors catching infections or poisoning due to large amounts of waste and chemicals will be reduced. Automation is a technology concerned with his application of mechanical, electronic and computer-based systems to operate and control production. This system is used To Operate Drainage Cleaning Mechanism. This project may be developed with the full utilization of men, machines, and materials and money. Also, we have followed thoroughly the study of time motion and made our project economical and efficient with the available resources. This system is Designed, fabricated successfully and also tested. It works satisfactorily. We hope that this will be done among the most versatile and interchangeable one even in future. Thus, we can able to obtain following through Drainage Cleaning Mechanism.

“DRAINAGE CLEANING MECHANISM”

FUTURE SCOPE

We have done has a good future scope in any engineering industry. The main constraint of this device is the high initial cost but has low operating cost and can be adopted anywhere across the country at any time, any conditions for cleaning the drainage.

Our project is simply a drain waste water cleaner machine, which is Automatically operated. Following different modification can be done to improve the output and efficiency.

The device affords plenty of scope for modifications, further improvements & operational efficiency, which should make it commercially available & attractive. If taken up for commercial production and marketed properly, we are sure it will be accepted in the industry. It has plenty of scope if the device is made larger in size.

[1] These cleaners are easy cheapest way to fix drainage problems. Easy to operate, as no special skill is required.

[2] Reduction of labor-oriented method of cleaning, thus upgrading dignity of labor.

[3] Light weight and easily portable. Requires nearly 12-24 volts of power.

[4] Large amount of garbage will collect which can be re-manufacturable.