

Automatic Sewage Cleaning Machine

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Abstract: -- In this project the proposal concept is to replace the manual work in drainage cleaning by automated system. Now a day's even through automation plays a vital role in all industrial applications in the proper disposal of sewages from 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 pipes. To overcome this problem and to save the human life we implement design. "Automatic sewage cleaning system". We designed our project to use this in efficient way to control the disposal of wastages and with regular filtration of wastages, clearance of gaseous substance are treated separately and monitor the disposal of frequent manner.

I. 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. The waste and gases produced from the industries are very harmful to human beings and to the 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 motor, chain, driver, bucket, frame.

II. WORKING PRINCIPLE

The devices is place across drain so that only water flow through lower grids, waste like bottle, Etc. Floating in drain are lifted by teeth which is connected to chain. This chain is attached by gear driven by motor. When motor runs the chain starts to circulate making teeth to lift up. The waste materials are lifted by teeth and are stored in waste storage tank.

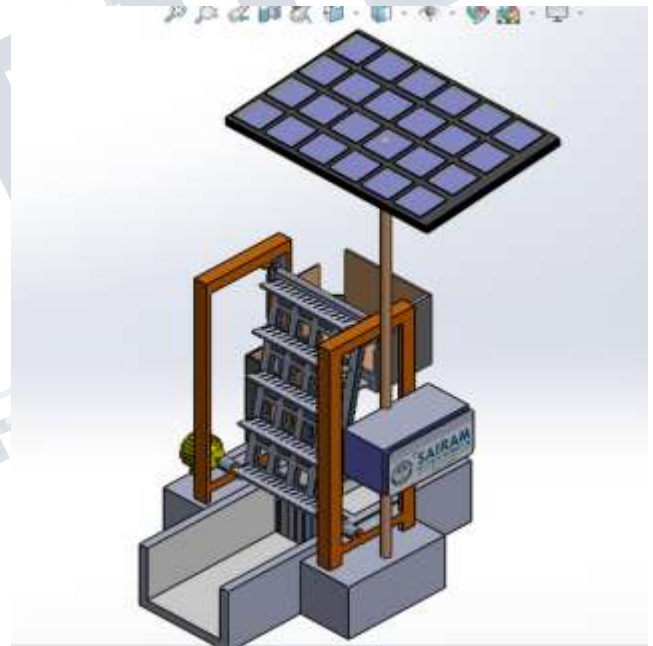
ADVANTAGES

- ✓ Production cost is very low.
- ✓ No need of purchase special machine.
- ✓ It is mainly very useful to hold the lengthy plate (1.5 feet) in particular position.
- ✓ It's operated and manufactured is simple.
- ✓ It is compact and portable.
- ✓ Avoid the mosquito generation from the waste.

DISADVANTAGES

- ✓ Small vibration occurs due to wire brush wheel attachment.

- ✓ In order to avoid vibration the machine should be properly foundation with the floor.



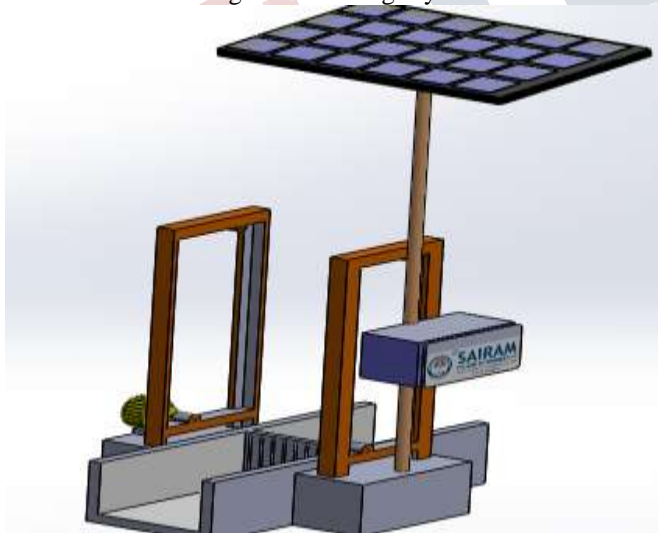
3D Diagram Application

- ✓ It is used almost in all types if drainage (large, small& medium).
- ✓ This machine is mainly used in cleaning system.
- ✓ Project to use this in efficient way to control the disposal of wastages and with regular filtration of wastages.
- ✓ This device is suitable to hold flat type (maximum length 5 feet).

III. SCOPE OF DESIGN

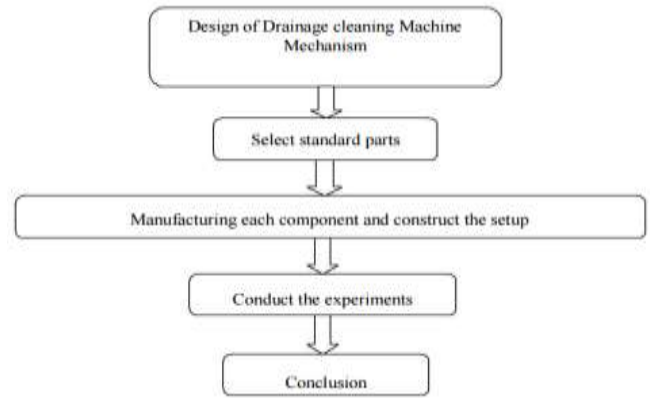
The designed drainage system cleaner has three parts. Problems were encountered powering the system with electricity or any other energy source as it was not ideal. The system is not dependent on electricity or any form of chemicals for power source because these sources could not stand the harshness of the effect of the rain and the running water, thus its first part is The Propeller which generates energy from action of the running water which it converts to transmits it to The Cleaner which is the second part, the propeller being the power house of the machine also transmits motion to the third part The Pan which takes the waste materials into a safety trash can.

The CleanerThe cleaner sieves out the waste materials. Just like the propeller, the cleaner consist of eight arms which are also connected to a centre rod to allow motion. It receives its source of energy through Belt drive-A from the propeller. Unlike the propeller the cleaner does not wholly constitute of a flat metal but half of it is made of a net to effectively sieve the running water without any form of blockage. The soles of the arms are also made of nets which help the arms effectively sieve the water running in the drainage system.



SYSTEM FLOW DIAGRAM

Methodology used for whole processing of Drainage cleaning Machine is given below; this methodology gives way about how work is to be carried out in systematic way. It is standard process of describing process, how it is done in simplest manner.



DESIGN DESCRIPTION

Configuration comprises of use of logical guideline, specialized data, and creative energy for advancement of new component to perform particular capacity with most extreme economy and effectiveness. Thus cautious outline approach must be embraced. The aggregate plan work has been part into two sections.

1. System design
2. Mechanical design

A. SYSTEM DESIGN: Framework configuration is for the most part concerns the different physical limitations and ergonomics, space prerequisites, game plan of different segments on casing at framework, man-machine collaboration, no. of controls, position of controls, workplaces, of upkeep, extent of change, weight if machine from ground level, add up to weight of machine and significantly more.

B. MECHANICAL DESIGN: In mechanical design the components are listed down and stored on the basis of their procurement, design in two categories namely.

1. Designed parts
2. Parts to be purchased

Mechanical outline stage is imperative from the perspective of originator as entire achievement of venture relies on upon the right plan examination of the issue. Numerous preparatory options are killed amid this stage. Creator ought to have sufficient learning about physical properties of material, load stresses and disappointment. He ought to recognize all inside and outer powers following up on machine parts.

IV. COST ESTIMATION

S.NO	COMPONENTS	QUANTITY	COST(in Rupees)
1	Gear Motor	1	4500
2	Spur gear & sprocket	4	3000
3	Chain drive	2	1000
4	Bucket & mesh	8	1500
5	Shaft and raw material	2	1200
6	Conveyor	1	1300
7	Battery	2	4000
8	Solar panel	1	3500
Total			20000

The Chain Drives

The links in the drainage system cleaner consist of gears and chain drives, which transmit motion to other parts of the machine system. chain drive A is connected to the cleaner which allows it to make a motion to sieve out the waste materials in the drainage system. The cleaners move in opposite direction to the propeller, the motion provided by Belt drive A (gear A) is then linked to gear B which allows the chain drive A to provide a mechanism in the cleaner that moves opposite the direction of the running water. While chain B is directly linked to the third mechanism (The Pan)

DISCUSSION

On the first day it rained in the month of September the rain increased and it lead to an increase in the velocity and volume of the running water, there were many garbage in the drainage system which made the arms of the propeller to move at the same rate with the velocity of the running water but during the third test the waste materials have reduced and it allowed the arms of the propeller to move at a relatively slow velocity. On the first day it rained in the month of October, the rain was not continually increasing which resulted to a low amount of flow of waste materials in drainage system. This made the arms of the propeller to move at a velocity that was too slow but during the third test the rain increased and it allowed the arms of the propeller to move relative to the velocity of the running water and hence the system was more effective. On the first day it rained in the month of November the rain continually increased leading to an increase in the velocity and volume of the running water, but also a lot of particles in the drainage system made the arms of the propeller to move at the same rate with the velocity of the running water but during the propeller moved by the action of the wind as the velocity of the running water was not enough to fast motion in the propeller



V. RESULTS AND DISCUSSION

While conducting the experiment the parameters considered are uniform flow rate of water, depth of the channel is 1feet and height of the channel is 3feet, rate of disposal of waste is uniform, lifter speed and motor speed is constant. a. Alarm will turn on when the collecting bin is filled. b. Lifter speed is constant and it regularly lifts the waste. c. Cost of the machine is economic and it requires only 12-24 volts of current.

CONCLUSION :Automation is a technology concerned with his application of mechanical, electronic operate and control production. This system is used TO OPERATE AUTOMATIC SEWAGE CLEANING MACHINE. 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 was 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 AUTOMATIC SEWAGE CLEANING MACHINEThe deplete squander water cleaner machine is planned and made by utilizing gear changing and shaft coupling rule. It comprise fundamentally DC equipped engine, shafts, squander expulsion plates, clean receptacle, course, sprocket and chains. Construction materials are effortlessly available, creates work(development and maintenance),simple to build.

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