Semi Automatic Drainage Cleaner

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ABSTRACT: Nowadays automation plays a very important role in every field but proper disposal of drains is still a concern. Essential treatment is not done on this wastewater. This research paper is about eliminating solid waste from the wastewater in drainage or sewage system of industries and residential areas with the help of a proper machine. This idea also helps to reduce the pollution and maintain the standards. Manual Scavenging which is a very harmful activity can also be eliminated through this project

KEYWORDS: Wastewater, Essential Treatment, Manual Scavenging.

I. INTRODUCTION

Cleaning of drains/gutters has always been a problem. Labour's 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 This project semi automatically cleans the water in the drainage system randomly and removes waste and this form an efficient and easy way of cleaning the drainage system and preventing the blockage. It also reduces labour and improves the quality of water that is cleaned. If the garbage is allowed to flow, they will end up flowing down to recreational beaches used for tourism purposes making a scene not pleasurable to the eyes else these garbage flow to residential sites where they are burnt in a way of getting rid of them, thereby causing climate change. Here we provide a semi-automated drain gutter cleaning mechanism to tackle these modern-day gutter jamming issues. This proposed system uses an automated gutter (or) 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.

The problem such as Environmental pollution and spreading of viral diseases are avoidable. Automation of Drainage Cleaning System would reduce the risk of various diseases spread due to accumulation of waste. The devices are place across drain so that only water flow through lower grids, waste like bottle, etc. Floating in drain is lifted by a tooth which is connected to chain. This chain is attached by sprockets 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.

Automated 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. In this system we used motor, chain, driver, teeth, frame, SMPS.

II. LITERATURE REVIEW

I.   Dr. K.Kumaresan

During the study of automation technology they realized that 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 SEMI AUTOMATIC SEWAGE CLEANING.

II.   Ndubuisi C. Daniels

Showed the system cleaner machine wont to remove garbage and sewage automatically which helped to shield the environment from different varieties of environmental hazards. The system cleaner has three major parts which are the Propeller, the Cleaner and also the Pan all makes up for its effective functioning.

III.   R. Sathiyakala,

Explained E bucket (electronic bucket) use for drainage cleaning system because Ebucket 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 with none reasonably affection of the bacteria.

IV.   Prabhushankar N.

Designed a machine which used reciprocating pump because the main component rather than pump for dewatering of drainages. As pump was costlier and fewer effective in complete removal of suspended and heavy solids. They used pneumatic and spring system with reciprocating cylinder. There was use of pneumatic cylinder which used power of compressed gas to supply linear motion with reciprocation. One component of pneumatic system was spring return pneumatic cylinder. One drawback with it had been less efficiency, as a part of force produced by cylinder was lost because it tried to push against the spring.

III. OBJECTIVES

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.

1. To construct a machine which is easy to use and movements of parts.
2. To build a device which is durable as it should be free from rust.
3. To construct the light weight and a compact machine.
4. To build a machine which is safe in all aspects as it does not harm the interior.
5. Connected to the machine there will be a storage tank to store the waste.
6. To make the proper usage of the waste materials.
7. To design the machine in convenient manner to separate the solid waste.
8. Machine should be economically designed.
9. Handling of machine should be easy.
10. Project future quantities of waste generation in India.

IV. PARTS AND WORKING

MODEL

1.   MOTOR:

DC motors are designed to convert electrical power into mechanical power and as a consequence of this, during periods of deceleration or if externally driven, will generate electrical power. In this project the motor gets its input from SMPS and gives the rotary output to the shaft. A 12V 30RPM motor is used to provide the rotary motion in this project.

MOTOR

2.   SHAFT:

A shaft is a rotating machine element, usually circular in cross section, which is used to transmit power from one part to another, or from a machine which produces power to a machine which absorbs power. Two shafts are connected through chain mechanism and it transfers rotary motion to the teeth.

SHAFT

3.   BEARING:
A bearing is a machine element that constrains relative motion to only the desired motion, and reduces friction between moving parts. 6002 no. bearing is used in this project.

BEARING

4.   SPROCKET:
A sprocket or sprocket-wheel is a profiled wheel with teeth, or cogs, that mesh with a chain, track or other perforated or indented material. It is used to transfer power to the shaft.

SPROCKET

5.   Switched Mode Power Supply:
A switch mode power supply is a power converter that utilises switching devices such as MOSFETs that continuously turn on and off at high frequency; and energy storage devices such as the capacitors and inductors to supply power during the non-conduction state of the switching device. A 12V and 5AMP SMPS is used in this project to give input to the motor.

SMPS

V. FUTURE SCOPE
This model can be made fully automatic by adding various features like sensors and remote control. If made fully automatic it will become more efficient and user friendly

VI. CONCLUSION
Automation is a technology concerned with the application of mechanical, electronic and computer-based systems to operate and control production.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.

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