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A Study of Trash Cleaner

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ABSTRACT

An apparatus is described which separates small solids from process waste water. A continuously rotating elongated drum screen having a large diameter interior flow channel removes the solids. The drum screen contains a continuous loop of closely spaced link members each having a foot at one end projecting towards the interior of the drum chambre. Pivot members are connected to the links and these pivot members are driven by lugs attached to an endless loop chain. The chain is driven by variable speed motors. A flushing system mounted on top of the drum screen washes solids into a hopper where liquid is returned to the drum inner chamber and solids are sent to solid waste disposale. A mechanically cleaned bar screen or bar rack is disclosed for removing debris from water and wastewater treatment facilities which comprises a frame with housings supported thereon and a bar rack and dead plate. The apparatus is supported on the ledge of the sluice of a water or wastewater treatment facility tilted backward at an angle of about 0°-30° with the bar rack submerged in the flowing stream of water. A carriage carries a pivotally mounted rake assembly with a rake engaging the bar rack. The carriage is reciprocated along a guide rail by motor operated lead screws which extend throughrollnutassemblies supporting the carriage. At the top of the traverse of the carriage, the rake is swept by a wiper to remove debris to discharge down a chute for pick up. The motorized drive system is totally enclosed. The motor and gear boxes are stationary and do not travel with the rake carriage. Corrosion resistant materials are used to ensure long life. The rake carriage is water tight and can be temporarily submerged without damage to the mechanism. The lead screws and linear guide system are enclosed. A motor operated linear actuator system provides positive control to movement of the rake assembly. A programmable controller (PLC) constantly controls the electromechanical actuator and lead screw drive unit to periodically operate lead screws to move the carriage up and down at selected intervals and operate the linear actuator to control angular movement of the rake assembly.

Keywords : Programmable Controller, Automatic Drainage Water Cleaning and Control System, Motor, Chain,Driver, Bucket, Frame, DRAINMOD, DWM, GSM module

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 is monitor by municipal In this system we used motor, chain,driver, bucket, frame.

Today world required speed in each and every field. Hence rapidness and quick working is most important. Now days for achieving rapidness, various machines

and the equipments are being manufactured. In such a modern era of liberalization, small-scale industries are contributing in a big way to the growth of our country.The engineer is constantly confronted with the challenges of bringing ideas and design into reality. New machines and techniques are being developed continuously to manufacture various products at cheaper rates and high quality. Taking into account the above contribution we have tried to manufacture such equipment, which is the accessory of machine tool to have the treatment to the cutting fluid after having used as a coolant. Because the coolant after having continuous use, gets mixed up with the lubricating oil and its property gets changed. Hence it becomes necessary to separate the oil from the mixture of the oil and the coolant.

II. LITERATURE REVIEW

Ale, S., L.C. Bowling, J.R. Frankenberger, S.M. Brouder, and E. J.Kladivko. 2010. Climate variability and drain spacing influence on drainage water management system operation. Vadose Zone Journal. 9(1):43-52. The effects of climate variability, drain spacing, and growing season operational strategy on annual drain flow and crop yield were studied for a hypothetical drainage water management (DWM) system at Purdue University's Water Quality Field Station using the DRAINMOD model. Drainage water management showed potentiafor reducing annual average (1915–2006) drain flow from all drain spacings (10–35 m) regardless ofthe growing season operational strategy, with reductions varying between 52 and 55% for the drain spacings considered. Approximately 81 to 99% of the annual drain flow reduction occurred during the non-growing season, depending on the operational strategy. Fixed DWM operational strategies led to an increase in mean predicted yield for narrower spacings compared with conventional drainage systems. Maximum yield was achieved with no control for drain spacings wider than 20 m in 50% of the years. Armstrong, A. C. and E. A. Garwood. 2001. DOI: 10.1002/Hyp. 3360050204. Hydrological Consequences of Artificial Sewage of Grassland. DOI: 10.1002/hyp.3360050204. Copyright © 1991 John Wiley & Sons, Ltd. Soil water regimes and water balances are presented for a series of drained and undrained experimental grassland plots, intended to examine the agronomic consequences of drainage. Although drainage has lowered the water tables and reduced the duration of waterlogging in the drained plots, its effects in 2 terms either of the total waterquantities leaving the site or of peak flows is quite small. The major effect of drainage is to alter the route of water loss from the site. In its undrained state, the soil is waterlogged for the majority of the winter, incident rainfall cannot infiltrate, and water leaves as surface runoff or near-surface flow. The introduction of fissures by mole drainage both provides an outlet and enhances the macroporosity, so that the rain moves rapidly through the soil and appears as drain flow. Consequently, the additional delay in generating peak runoff through the drainage system is only of the order of 30 minutes on this site.

III. WORKING PRINCIPLE

The proposed Automatic Sewage Cleaner is placed across the drain in order to filter the waste things like Bottles, Papers etc. Floating in drain is lifted by bucket conveyor which is connected to chain. This chain is attached by sprocket with shaft driven by wiper motor which is energized by solar photovoltaic cell. When wiper motor runs the shaft, chain starts to circulate making the bucket conveyor to lift up. The waste materials are lifted by conveyor and are stored in waste storage tank. Once tank filled, then, the IR sensor is enabled by which the GSM module will be working in order to give the alertness to the customer in the form of SMS. Hence, the storage tank could be cleanedout properly so that drain water will flow easily.

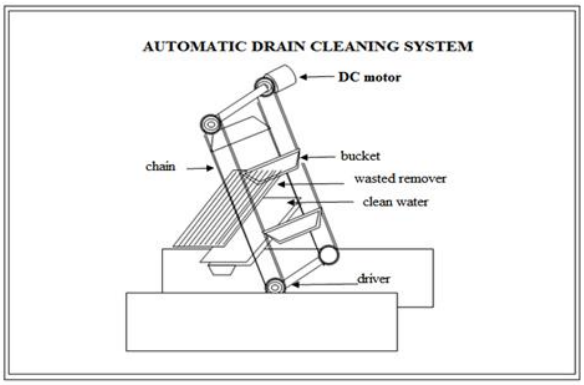

Figure 1. Trash cleaner schematic diagram

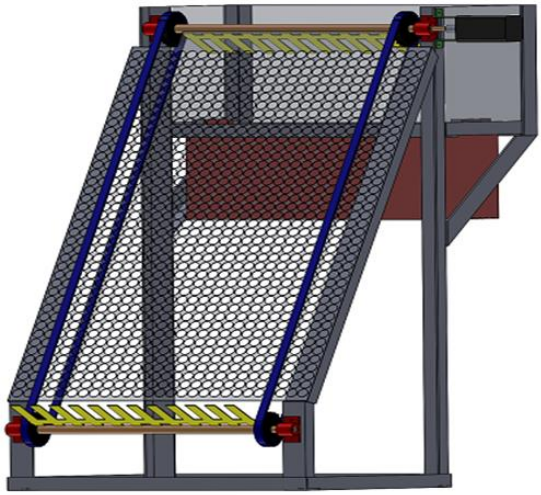

Figure 2. Trash cleaner proposed model

APPLICATION

- ✓ Applicable in sewage cleaning .
- ✓ Applicable in river, etc,…
- ✓ It is used 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).

ADVANTAGES

It is a non-conventional river cleaning system

- ✓ It's initial & maintenance cost is low
- ✓ Skill worker not required to drive the system
- ✓ Environment friendly system
- ✓ Easy in operation

IV. CONCLUSION

In the treatment system of drainage Waste water control by the motor, roller chain and sprocket, lifter and the collecting bin to achieve semi-automatic control of sewage waste water treatment. Drainage from industries is treated through this project to meet the national emission standards, with stable operation, low cost and good effect. Drainage wastewater control is treated by this method to irrigate plants, clean toilets, etc. The cleaner functioned move effectively during the heavier rains which had more volume of running water with garbage and high velocity. By this proposed system, the men power will be reduced.

V. ACKNOWLEDGEMENT

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