International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 05 Issue: 03 | Mar-2018 www.irjet.net p-ISSN: 2395-0072

Drainage Water Cleaner Machine

Ganesh S. Patil[1], Rahul A. Pawar[2], Manish D. Borole[3], Shubham G. Ahire[4], Ajay L. Krishnani[5], Amit H. Karwande[6]

[1,2,3,4] BE Student, Dept .of Mechanical Engineering SND COE & RC, Yeola, Maharashtra, India
[5,6] Assistant Professor, Dept. of Mechanical Engineering, SND COE & RC, Yeola, Maharashtra, India

---

Abstract - *Water is the basic need for the existence of life on earth. In spite of 70% water on earth majority of water is not suitable for drinking purpose. There is a huge demand of clean water as it is used for a variety of purpose such as drinking, bathing, cleaning, cooking etc. Impurities present in water can cause serious health issues that can damage the life of human beings. Wastewater is characterized as the stream of utilized water from homes, organizations, ventures, business exercises and foundations which are subjected to the treatment plants by a precisely planned and built system of funnels. The measure of stream dealt with by a treatment plant shifts with the season of day and with the times of the year. The procedures looked into here incorporate both those that expel poison soils in wastewater and those that vanishes them. Utilizing a wastewater treatment innovation that expels, instead of decimates, a toxin will give a treatment remains. This sort of wastewater is characterized and characterized by its wellsprings of cause. Regularly 200 to 500 liters of wastewater are created for every individual associated with the framework consistently. At wastewater treatment plant, this stream is dealt with before it is permitted to be come back to the earth. There are no occasions for wastewater treatment, and most plants work 24 hours each day of the week. Wastewater treatment plants takes a shot at basic purpose of the water cycle, helping nature shields water from the intemperate contamination. Most treatment plants have essential treatment and auxiliary treatment.*

***Key Words*: Profile, Wastewater, Essential treatment, Auxiliary treatment.**

1. INTRODUCTION

The waste and gases produced from the industries are very harmful to human beings and to the environment. Our proposed system is used to clean and control the drainage level using auto mechanism technique Mechanical control techniques include the total or halfway evacuation of Plastic containers and Un- disintegrated solids by mechanical means, including: gathering, destroying, cutting, rototilling, rotating, and binding. Mechanical control techniques can likewise be utilized to speed up manual cleaning exercises, including hand cleaning, raking, and cut stump control, with the utilization of engine driven hardware. A mechanical oceanic gatherer (reaper) is a sort of freight boat utilized for an assortment of undertakings, including amphibian plant administration and waste expulsion in seepage, lakes, coves, and harbors. Reapers are intended to gather and empty vegetation and flotsam and jetsam utilizing a transport framework on a blast, flexible to the suitable cutting stature, up to 3 feet underneath the surface of the water. These administration strategies for A scope of hardware for overseeing and controlling amphibian vegetation is being used today, intended for particular plant sorts (floating ,submersed, and new vegetation) and for operation in particular sea-going environments (untamed water, trenches, shorelines, and wetlands). Cutter bars gather material and bring it on board the vessel utilizing the transport; when the freight boat has achieved limit, slice material is transported to a transfer site. Management involves a given request for waste counteractive action and minimization.

2.PROBLEM STATEMENT

To find a solution for the problem of water logging due to plastic, thermocol metal, etc. To treat problems like malaria, typhoid, etc. caused due to water accumulation

3.OBJECTIVE

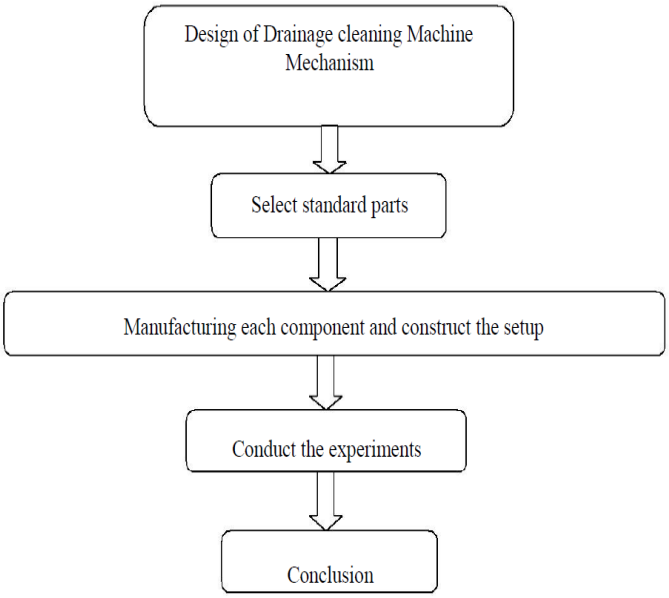
The main objective of this project to minimize or overcome the problem which can faced in manual machine. Also increased the dumping rate of waste. And help to operator do easily work.

The purpose of selecting drain waste water cleaner machine are is follow-

- Simplicity of Design and Control.
- This type of machine are easy to operate and less time consuming.
- Evaluate the effectiveness of alternative drainage design and operational practices, to reduce nitrate-N losses from Drained agricultural lands.
- Assess the impact of various soil and crop management practices on reducing nitrate-N loadings to subsurface drains.

4.METHODOLOGY

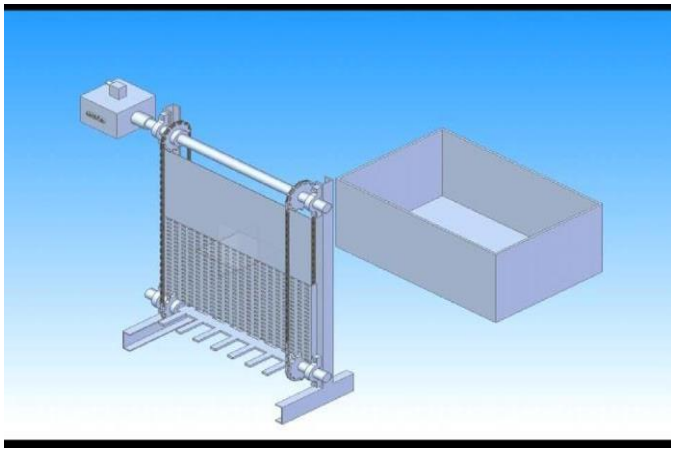
Methodology used for whole processing of Drainage cleaning Machine is given below; this methodology gives way about how work is to be carried out in systematic way. It is standard process of describing process, how it is done in simplest manner.



5.DESIGN OF VARIOUS COMPONENTS

Design consists of application of scientific principle, technical information, and imagination for development of new mechanism to perform specific function with maximum economy and efficiency. Hence careful design approach has to be adopted. The total design work has been split into two parts.

1. System design
2. Mechanical design



cad model

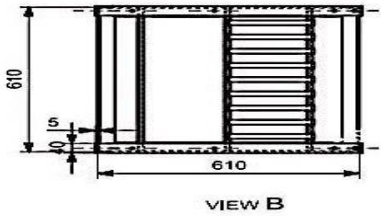
5.MATERIAL SELECTED

The components used in this Darin Waste Water Cleaner are AC geared motor rapper and lower shaft, ball bearings, backside waste bin, adjustable plates, chain drive. the material used for C.I for frame, for ball bearing the type of Bering used is pills block ball bearing made of C.I,galvanized steel is used for waste bin.

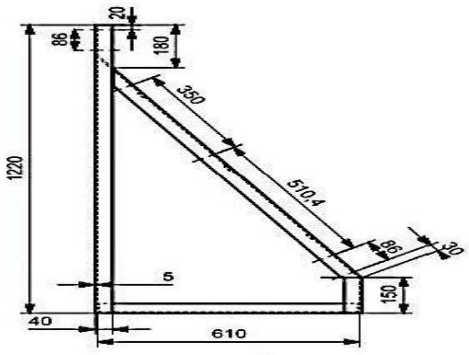
6.SELECTION OF MATERIAL FOR FRAME

Selecting material GCI 15 having Tensile strength (min) = 150 N / mm^2

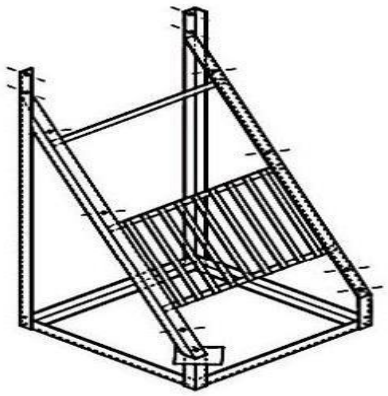
For safer design considerations as 65.75 N / mm^2 Therefore all assumptions are in safer state.

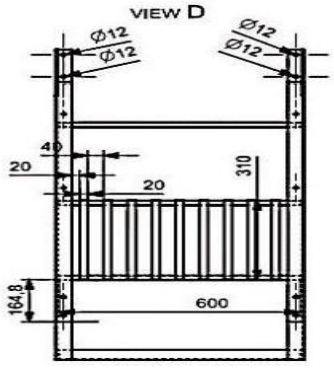


VIEW B



VIEW A


VIEW D



VIEW C

7.SELECTION OF MOTOR:

Electric motor is an electric device which is used to convert electrical energy into the mechanical energy. There are two types of motors:

1) AC motor 2) DC motor

We are using dc motor. Torque provided by motor is required only for to start the oscillatory motion of pendulum meanwhile return of pendulum to its extreme opposite position is done by self-weight of pendulum because of this small requirement of torque we are using dc motor of less power input.

Designation	UTS (N/mm^2)	YEILD STRENGTH (N/mm^2)
15C8	440	240

SPECIFICATION OF MOTOR

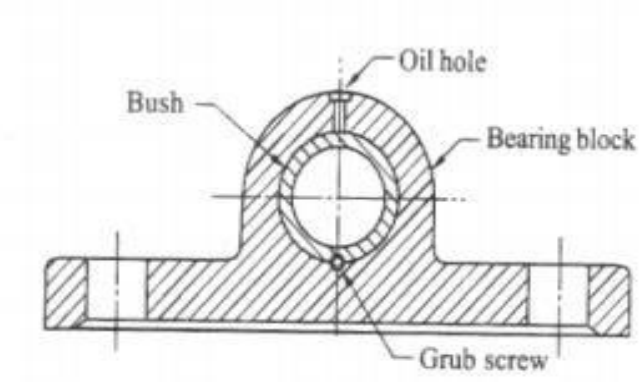
1. Voltage: 12 volt
2. Current: 7 amp
3. Speed: 30 rpm

8. BEARING AND BEARING HOUSING:

Bearing A bearing is machine part, which support a moving element and confines its motion. Since there is a relative motion between the bearing and the moving element, a certain amount of power must be absorbed in overcoming friction, and if the surface actually touches, there will be a rapid wear. Shafts are generally supported by two bearings in the radial and axial directions.

A.PEDESTAL BEARING:

A cylindrical hole formed in a cast iron machine member to receive the shaft which makes a running fit is the simplest type of solid journal bearing. Its rectangular base plate has two holes drilled in it for bolting down the bearing in its position as shown in the figure.



SPECIFICATION:

- Type: Pillow Black
- Model Number: P204
- Unit Number: UCP204D1
- Inside Diameter: 20mm
- Length :127mm
- Bolt Size:10mm
- Weight: 0.49kg
- Material: Gray Cast Iron or Ductile Iron
- Color: Green, Blue or According to customers' requirements
- Place of Origin: Fujian, China (Mainland)

Shaft dia. (mm)	Unit Number	Nominal Dimensions									
		H	L	J	A	N	N 1	H 1	H2	L 1	B	S
20	UCP204D1	33.3	127	95	38	13	16	14	65	42	31	12.7

9. COST ESTIMATION OF THE PROJECT:-OIL EXPELLER.

Also, each spare of the project is to be done in 01 quantity, so the costing is more.

Later if the regular production will be started, the costing will be less. The price details for our development are given as below.

Sr no	Name of part	Material cost(raw)	Material Unit	Machine & assly. cost	total
1	Foundation frame	2000	8x2ft.	850	2850
2	Motor DC	950		-	950
3	Sprocket 6inch	780	4	Cast Iron	3120
4	Chain 1/2inch 10ft	1230	2		2460
	Solar panle	700	1		700
	Battery 12v 7Ah	1100	1		1100
5	Bearing204	350	4	-	1400
8	the machine charges	900	-	-	900
10	Screw nut adjustment	310	-	-	310
11	electric wiring	510	-	-	510
12	Traveling charges	1700	-	0	1700
14	miscellaneous	0	3000	0	3000
				TOTAL	19000

9. APPLICATIONS OF MACHINE

• It can be used in BMC

• It can be used to separate plastic, thermocol from sewage

• It can be used in plastic industries

10. CONCLUSION

In recent past there have been many research carried out waste water management Our project also stand one of them with ideology & new tech Many specific empirical studies have been carried out and categories such as drainage cleaning system and its automation have been studied to a great depth. We focus more on making the system mobile in the drainage.

1 The cleaner functioned move effectively during the heavier rains which had more volume of running water with garbage and high velocity

2. The system can move in the drain to collect the floating waste so as to reduce human labour.

3. In the treatment system of drainage Waste water control by the motor, roller chain and sprocket, lifter and the collecting bin to achieve semiautomatic control of sewage waste water treatment.

7. REFERENCES

REFERENCE FROM JOURNAL:

[1] International Journal Of Engineering Research And Application (IJERA)

[2] Sci Verse Science Direct Procedia Engineering 41(2012) 420-425

[3]Abdelayam, S., A. J. Hoevenaars, P. P. Mollinga, W. Scheumann, R. Slootweg, and F. VandSteengergen. 2005. Agricultural drainage*:* Towards an integrated approach. Irrigation and Drainage Systems (2005) 19: 71–87 C Springer 2005

[4]Ganesh U L,et.al. "Automatic Drain For Sewage Water Treatment Of Floating Materials", International Journal of Research in Engineering and Technology, Vol No- 05, Jul-2016.

Books:

1) Bhandari V.B., Design of Machine Elements, Tata McGraw Hill Publication Co. Ltd.

INTERNET

[1] www.wikipedia.com/search/drainage cleaning machine

[2] www.mdpi.com/2073-4441/6/976