Energy Recovery From Sewage Waste For Institutional Building

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Abstract- *Zeal education society's, Pune is well established educational group and there is population of 1500 which creates sewage generation.But still now there is no treatment plant and sewage generated from the educational building dispose without treatment and on the open ground near the college. Similarly, non-treated sewage also can create various problems to the community situated near institution and also to the environment. So, it is required to construct a sewage treatment plant with sufficient capacity to treat the sewage generated. The project deals with problem is that where non mechanized sewage treatment plant is efficient to treat educational building waste as compared to mechanized treatment plant or not.*

I. INTRODUCTION

The In India till date our society not aware about sewage treatment and educational institute or other such buildings are the example of such buildings which are generated the liters of amount of sewage waste every day which is not treated and released without treatment which is harmful for human being present in society. So, there is problem related to not providing treatment plant in educational building is that space required for treatment plant, Amount invested in sewage treatment plant.

II. LITERATURE SURVEY

1.JumokeOladejo, Kaiqi Shi, Xiang Luo, Gang Yang, Tao "Review Study on energy recovery from sewage waste "

The increasing volume of sewage sludge from wastewater treatment facilities is becoming a prominent concern globally. The disposal of this sludge is particularly challenging and poses severe environmental hazards due to the high content of organic, toxic and heavy metal pollutants among its constituents. This study presents a simple review of four sewage to energy recovery routes (anaerobic digestion, combustion, pyrolysis and gasification) with emphasis on recent developments in research, as well as benefits and limitations of the technology for ensuring cost and environmentally viable sewage to energy pathway.

Jumoke Oladejo, Kaiqi Shi, Pinzheng Guo, Stephen Adegbite, Tao Wu "Review Study on energy recovery from sewage waste "

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III. PROBLEM STATEMENT

To find the proper sewage treatment plant with comparison of mechanized treatment plant which is economical and within small space which can give maximum efficiency to the educational building.

IV. SCOPE OF PROJECT

Reduction of Landfill area requirement. Implementation of project may reduce the waste volume. Considering the lifecycle of 25 years, it will save Landfill area requirement by more than 80 Ha.

V. METHODOLGY

Step 1: Screening and Pumping
Step 2: Grit Removal
Step 3: Primary settling
Step 4: Aeration / Activated Sludge
Step 4: Aeration / Activated Sludge
Step 5: Secondary Settling
Step 6: Filtration
Step 7: Disinfection
Step 8: Oxygen Uptake
Steps Implemented in the Project:
• Preliminary survey of institutional building regarding project
• Study and obtain data about sewage treatment plant
• Select suitable type of non-mechanized treatment plant
• Comparison between mechanized and non-mechanized treatment plant

VI. VARIOUS TEST PERFORMED ON WATER

1. Theoretical oxygen demand (ThOD) – this is the theoretical amount of oxygenrequired to oxidize the organic fraction of the wastewater completely to carbon dioxide
and water.

2. Chemical oxygen demand (COD) – this is obtained by oxidizing the wastewater with a boiling acid dichromate solution. This process oxidizes almost all organic compounds to carbon dioxide and water, the reaction usually proceeding to more than 95 per cent completion.

The advantage of COD measurements is that they are obtained very quickly (within 3 hours),but they have the disadvantages that they do not give any information on the proportion of the wastewater that can be oxidized by bacteria, nor on the rate at which bio-oxidation occurs.

3. Biochemical oxygen demand (BOD) – this is the amount of oxygen required for the oxidation of a wastewater by bacteria. It is therefore a measure of the concentration of organic matter in a waste that can be oxidized by bacteria (‘bio-oxidized’ or ‘biodegraded’). BOD is usually expressed on a 5-day, 20°C basis – that is as the amount of oxygen consumed during oxidation of the wastewater for 5 days at 20°C. This is because the 5-day BOD (usually written ‘BOD5’) is more easily measured.

VII. RESULTS

Sr.no	Parameters	Inlet sewage	Mechanised treatment results	Non-mechanised treatment results
1	PH	7.0	7.4	7.1
2	DO(mg/l)	0.72	4.8	4.1
3	TSS(mg/l)	187.8	9.1	8.5
4	BOD(mg/l)	95.3	5.9	5.1
5	COD(mg/l)	187.9	8.3	7.9

VIII. CONCLUSION

Increasing sewage waste is very serious problem for a society. Seagerwast is biggest health risk of health and continues to threaten both quality of life and public health.

From our analysis on sewage treatment we observed following points:

1. Non mechanised sewage treatment plant is more economical, efficient as compared to mechanised treatment plant for any institutional organisation.
2. From non mechanised treatment plant we can save money, time, energy and due to this sewage can treated well and it beneficial to our society.

REFRENCES

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