



Comparison and Analysis of Activated Sludge Process and Moving Bed Bio Reactor

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Abstract:

The Moving Bed Bio reactor (MBBR) and Activated sludge process (ASP) is both are waste water treatment. Compare and analysis of MBBR and ASP in waste treatment plant with there all the specification. Advantages, disadvantages and there use. The MBBR is very effective process as compare to all the process. Less land is required, moderate cost is required. this method use of small as well as large waste water treatment plant. In this method use the mainly plastic media like viz. BI16, PP22, Mutag biochip 25TM. In this process lower sludge protection, favorable for nitrification. The process takes advantages of aerobic microorganism that can digest organic matter in sewage, and clumps together as they do so. The ASP process is a type of waste water treatment process for treating sewage using aeration and biological floc composed of bacteria. Take the samples of waste water of waste treatment plant. Tack the physical test in laboratory like vis. pH, COD, BOD, TSS, TDS, Turbidity and comparison.

Keywords: waste water, Nitrification, Fixed biomass, Moving Bed Bio Reactor (MBBR), Activated Sludge Process (ASP), Bio Chemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), MLSS, Total Suspended Solid (TSS), Total Dissolved Solid (TDS), Sludge, Aerobic, Floc, Flocculation, Biological treatment, Biofilm reactor, Hydraulic Retention Time (HRT), Sewage Treatment Plant (STP), Fresh water system, phenol, pulp and paper.

I. INTRODUCTION

1. Comparative Study of Different Technologies Involved in Small Sewage treatment Plant. Ayushi Mandloi¹, Ketan Jain², Khyati Shitole³. In this review, the present paper discuss with different technologies of waste water treatment for small sewage treatment plant in india. waste water treatment technologies are gaining attention of policy makers and industries for meeting the required pollution control guideline laid by the pollution board of the country and to make waste water fit for various usage and therefore leading to conservation of water resources for near future. The article provides comparison of various technologies commonly used in small size STP'S. various aerobic treatment technologies like Moving Bed Biofilm Reactor (MBBR), Membrane Bioreactor (MBR), Sequencing Batch Reactor (SBR), Activated Sludge Process (ASP), Up Flow Anaerobic Sludge Blanket (UASB) Reactor, suitable for treating waste water have been considered for comparative analysis.

2. Moving Bed Biofilm Reactor: A New Perspective In Pulp And Paper Waste Water Treatment. K.Vaidhegi¹, P.Sandhiya², M.Santhiya³. The pulp and paper mill is one of the high polluting effluent obtained from polluting industries. All the available methods for treatment of pulp and paper mill effluent have certain drawbacks. In this work experiment were conducted to treat the pulp and paper mill effluent using Moving Bed Biofilm Reactor. The waste water generated by these industries contains high COD, BOD, colour, organic substances and toxic chemicals. This study was carried out on laboratory scale Moving Bed Biofilm Reactor with proflex type bio-carriers, where biofilm grows on small free floating plastic elements with a large surface area and a density slightly less than 1.0g/cm³. The reactor was operated continuously at 50% filling of bio-carriers. During the filling percentage, the

removal efficiencies of COD and BOD were monitored at the time period of 2h, 4h, 6h, and 8h. The result showed that the maximum BOD and COD removal of 87% were achieved for the 50% filling of bio-carriers at the HRT of 8h.

3. Performance Evolution of Different MBBR Media In Waste Water Treatment. Shriyesh Mane¹, Rohan Kotwal², Sujit Mahadev³, Hema Kedari⁴, Prof. Sachin Mane⁶. The moving bed biofilm reactor is the process of in which micro-organisms grow of the media in suspended form in this paper mainly three different types of MBBR media like viz. BI62, PP22, Mutag biochip 25TM. In this paper, the comparative form of BOD, COD, PH, turbidity is studied with the help of different types of MBBR. This process is used of an ideal and efficient option for the process of treatment of industrial and domestic waste water and also used less area is required. The capacity of treated water is more amount of other Than treatment. MBBR is also helpful for more effective treatment. This process promotes suspended growth as well as attached growth system.

4. Treatment Of Waste Water Containing High Concentration Of Phenol And Total Dissolve Solid In MBBR. Arti D.Galgale¹, Neha B.Shah², Dr.Nirav G.Shah³. Many industries are generated the phenolic waste of acidic in nature. Sodium hydroxide is created the phenolic waste water with more amount of Total Dissolve Solid. This process is completed for Biological treatment of phenolic waste water treatment. In this paper three process are conducted result of an laboratory scale determine HRT in 1400mg/l. the study has been done evaluate effect of high phenolic concentration high total dissolve solid and COD removal of MBBR. The 8 litter capacity glass reactor is used and plastic media of polypropylene size Length is 16mm, diameter is 16mm & Area is 339mm²/m³.

With the result draw the graphs.

- Optimization of HRT.
- Effect of TDS on COD removal efficiency.
- TDS (mg/l) Phenolic concentration
1500(mg/l).

An aerobic MBBR can be used to remove phenolic from high TDS waste water. The effect of growth biomass on pollutant removal was much better than suspended growth biomass in MBBR.

5. Experimental comparison between MBBR and ASP system for the treatment of municipal waste water. G.Andreottola, R Foladori, M.Ragazzi and F.Tatano. In this research paper compare the two treatment process like viz: MBBR and ASP system the plastic media is used of the whole process about $160\text{m}^2/\text{m}^3$ surface area. It can be removal of efficiencies of COD higher than MBBR average of total COD 76% MBBR and 84% for activated sludge process. COD removals of 71% for both system. To maintain the variation of wastewater temperature .The limit of the MBBR was not the specific biomass activity but the biomass concentration.

6. Comparative Analysis Of Activated Sludge process And Moving Bed Bio-Reactor (MBBR) Technology Of Nesapakkam Sewage Treatment Plant-40mld. D.Sharmila. In this research paper study of the MBBB treatment. n sewage plant collect waste from commercial , Industrial , Domestic source and remove to ingredient of waste water . Physical, chemical, and Biological operations remove solid organic matter. In sewage treatment plant three stages is done. Primary treatment, secondary treatment, tertiary treatment. MBBR process use a plastic media of suspended attach growth medium. in activated sludge process recycling is done, High amount of land is required , and good quality of effluent is done. in Moving Bed Bio-Reactor process recycling is not done, stable under large variation, less land is required comparative of ASP treatment . Effluent Quality is good is much better than Activated Sludge Process. Design of Nesapakkam Sewage treatment plant for 40mld using the ASP and MBBR is done.

7. The Moving Bed Biofilm Rector (MBBR). Aniket B. pinjarkar¹, Rushikesh D.jagtap², Chaitanya K. Solanki³, Hitesh H. Mehta⁴. Moving Bed Bio-Reactor (MBBR) process is the best option for waste water, under standing of microbiology and treatment process. It is the simple and strong treatment. MBBR system is very suitable and for specific waste water required – nitrogen, high BOD/COD removal, including waste water required. Its use the plastic media of bacteria from the waste water attaches themselves to the floating carrier. MBBR media is less land required; moderated cost is required but more effective treatment compare to other methods. Biofilm technology is very strong and effective process. The reactor is have any shape or size depending of media. Design of reactor is base on local condition and waste water characteristic. Neutralize waste water passes through MBBR in BOD/ COD. Biofilm media are made by high density (0.95g/ml) polyethylene. standard filling of carrier is below 70% , max. specific area not more than $465\text{m}^2/\text{m}^3$. Design load for COD-BOD removal is $20\text{g COD}/\text{m}^2\text{d}$. The continue work is done in progress MBBR is dose not required return sludge flows. It has minimal head loss. It has been use small as well as large plant. Compare of ASP and MBBR advantages is

compact ness and no need for sludge. Test is done by the anaerobic waste water treatment.

II. REFERENCES

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