REVIEW ON

"Waste Water Treatment by using Rotating Biological Contactor"

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Abstract - *Rotating biological contactor (RBC) plays an important role when it examine for matter which is bio-degradable. And on account of feasibility for COD removal. There is easy way for designing RBC unit and for operation too. While consumption of energy and cost of maintenance being counts low, with efficiency of model. And this review tells the aspects of model that clears the things about performance and disk revolving speed, Content of organic materials present in, Times requirement and hydraulic parameter, bio film media, operational staging, temperature of influent, influent characteristics of untreated water, dissolved oxygen levels, submergence media in waste water. Somehow RBC recognized for their working abilities but it also being recorded the comparative analysis with other treatment of waste water.*

1. INTRODUCTION

A rotating biological contactor (RBC) is consider for bio-reactor growing model and another option as a present technology. In 1900s firstly RBC model was assembled with help of wooden plates with cylindrical shape (Mathure and Patwardhan 2005).) since then it's being widely using this technology in many regions, where RBC being prepared as per their requirements (Rodgers and Zhan 2003). Contact media transformation at very significant level being done till 1960s and early 1970s (Tchobanoglous and Burton 1991; Grady et al. 1999 (MBA et al. 1999). Also RBC fabricated with disk and disk or plate are in series with minimum spacing distance in between plates. Where all disk in tank either partially submerged or fully. Disk are connected to the shaft which tends to rotate by mechanical way, when shaft revolves and disk rotating in waste water, film that is bio-film is saturate on the waste water and it is nothing but organic matter in metabolized manner. All happens within the aerobic condition which tends to transforming oxygen within waste water by media on disk and therefore it aerobic oxidational process.

2. AFFECTING FACTORS FOR THE PERFORMANCE OF RBC

At firstly factor which are need to understand design parameters, and speed of rotating disk loading on reactor, contact media, submerged condition, biofilm characteristics, origin levels, submerged media type. Rotational speed also be important aspect as loading effect on speed and proper aerobic oxidation must be done.

While treating waste water oxygen level increases if the rotating speed of a disk attached to the axle rod increases. The micro- organism present in waste water going to more degrade (Israni et al. 2002). However things that are restrict speed of rotating biological contactor is power consumption at high level for RBC unit. This makes it less economical for treating waste water (Ramsay et al. 2006). If speed goes too high the present micro-organism in waste water will stripped off the media which shows effect on effluent, that is lower the degradable rate, with more organism stripped when more speed often with more power consumption (Hoccheimer and Wheaton 1998). According to Mathure and Patwardhan (2005), the acceptable rotating rate with minimum speed is up to 10 rpm with further design aspect.

2.1 ORGANIC LOADING ON RBC UNIT

Loading on RBC unit, defines during the design process, flow and HRT are further influence the organic loading which tends to change in hydraulic (Najafpour et al. 2005). Which leads performance details and summarized experiment for organic loading of RBC system, however data shows then value of organic loading rate increases and then show effect on efficiency of performance with decreases value and reduction of efficiency of unit.

2.2 OPERATIONAL PROBLEMS

Though RBC has many advantages, certain biofilm formation on disk and maintenance of disk in adverse condition makes it unfavourable. Cause of there is listed in operational problem (Sirianuntapiboon 2006). Failure of RBC while assemble mechanically are should be considered as well. In which shaft and axel rod on where contact media is propose and their failure recorded. Such raising problem occurs because of improper assemble of unit. Fabrication issues of unit, structure of

RBC reactor, locking issues of RBC unit like nuts bold, welding which leads the problem likes loading on shaft, maintenance problem, poor quality-corrosive fatigue. (Mba et al. 1999). Thus can say that expansion of these technology have these all restriction (Griffin and Findlay 2000). Design hints in proper dimension, degree submersion of medium extraction creation of biofilm. To achieve the optimum degree of treatment of waste water such formation of reactor depend on mechanical factor, which makes the reactor economical, fiseable and good mechanically engineered for attractive look (Patwardhan 2003). While mechanical engineering work of reactor following point be considered. As a method of RBC establish, those points are – hydrodynamic conditions, formation of biofilm and detachment process of biofilm on media used in RBC units. Thus at primary step one should hold experimental laboratory operational reactor with maximum operational efficiency of biodegradable kinetics with actual waste water. By which kinetics should help to prepare reactor at large scale of RBC system. The design algorithm presented by Patwardhan (2003). In which sedimentation tank being consist for grit removal, grease and others sludge type thick component.

For fixing corrosion issues of unit, it should be consist of non-corrosive material. Then disk, shaft, axel rod should design in order to operate in heavy operational use. Then recommendation RBC process are often found and design process stated by WEF and ASCE (WEF and ASCE 1998). RBC will going to favour when it will design normally and unconditionally of operational issues (Griffin and Findlay 2000). While mechanical failure, with more strong shaft and axel with an improved RBC support with operational time for 20 year expected and other improvement. Many applicable parameters of RBC stated for populated region (Mba et al. 1999; Brazil 2006).

3. CONCLUSION

RBC used as in a several way for treatment purpose and consider for treatment processes. But it has its own limitations, like hydraulic of reactors with waste water, oxygen transfer efficiency, aeriation condition, biofilm grows on disk of RBC and removal of these biofilm saturated on disk of RBC. So in many way there are propose mathematical models, so in order to fix it, though propose mathematical model are present of RBC reactor, it isn't mastered treatment for treating waste water. If we studies hydrodynamics and biofilm properties in that way. While operation of RBC, efficiency depend on the OTE of disk having different contact material. So while fabricating the RBC unit it should be consider that disk must as much as light weight with packed support. Influence physical characteristics of RBC-unit aren't study so well where other investigation need for this reactor are transformation of mass, hydraulic condition, creation of biofilm property, energy consumption. Therefore these studies regarding RBC reactor and performance concerning must have in a good scale pattern.

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