

Study of Textile Wastewater Characteristics for Raymond Textile and Design of Uasb Reactor

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Abstract:- The purpose of this paper was to study sources of water pollution and loading concentrations in textile Dyeing mills and also design of UASB reactor and also aim that to study various treatment units of existing ETP. Textile industry is a big source or provides employment to India. In textiles the bleaching, dyeing, printing and stiffening of textile products in the various processing stages (fiber, yarn, fabric, knits, and finished items). The Influent waste water values of BOD and COD are found to be higher than Central Pollution Control Board, Government of India. At Raymond industry waste water coming from dyeing department in addition to this they add waste water from septic sewage. UASB reactor is high rate anaerobic biological reactor. It has high rate of anaerobic treatment capacity, Treatment efficiency well under mesospheric temperature condition it means temperature range from 25 to 40°C. UASB is cost effective treatment to treat waste water.

Keywords:- ETP, UASB.

I. INTRODUCTION

Textile industry is one of the major important industries in world that provide employment with no required special skills and play a major role in economy of many countries. Textile can be maintained by both hand and machines. There are three different type of fibers used in manufacture of various textiles products. Cellulose, protein and synthetic fibers. Each type of fibers is dyed with different type of dyes. Cellulose fibers dyed using reactive dyes, direct dyes, naphthol dyes and indigo dyes,. Protein fibers are dyed using acid dyes and lanaset dyes. Synthetic fibers are dyed using disperse dyes, basic dyes and direct dyes. The textile industries produce various chemicals and large amount of water during the production process. About 200 L of water are used to produce 1 kg of textile. The water is mainly used for application of chemicals onto the fibers and rinsing of the final products. From dyes and chemicals containing trace metals such as Cr, As, Cu and Zn which are capable of harming the environment and human health. The textile waste water can cause various problems such as hemorrhage, ulceration of skin, nausea, skin irritation and dermatitis.

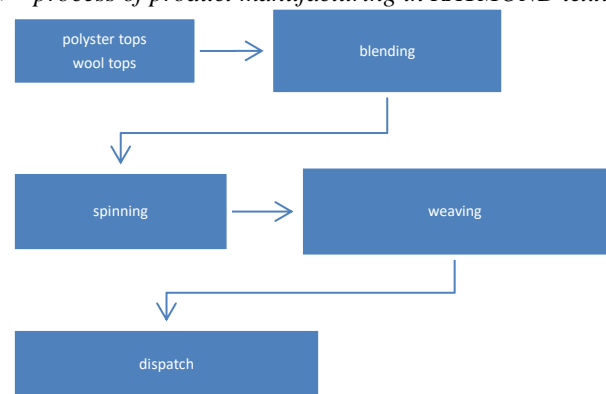
II. SCOPE OF PROJECT

- To study the characteristics of influent and effluent of textile industry.
- To evaluate the economical methods for treatment of textile industry.

- To Study the different treatment methods of textile industry.
- To study the biogas production variation by influences of characteristics in the textile industry.

III. METHODOLOGY

➤ process of product manufacturing in RAYMOND textile



In industry dyeing is only wet process and all are dry process.

➤ Waste water treatment of existing ETP

At Raymond industry waste water coming from dyeing department in addition to this they add waste water from septic sewage. They designed ETP for 1200m³/day waste water quantity.

➤ Study of characteristics of waste water from industry.

Sr.no	Characteristic	Raw water			Treated water
		Min	Max	avg	
01	PH	4.77	7.62	6.73	7.06
02	TDS	450	1180	710	885
03	TSS	20	152	76	15.58
04	BOD	23	247	137	18.5
05	COD	67	675	350	55
06	Chloride	15	501	210	305

➤ Design of USAB

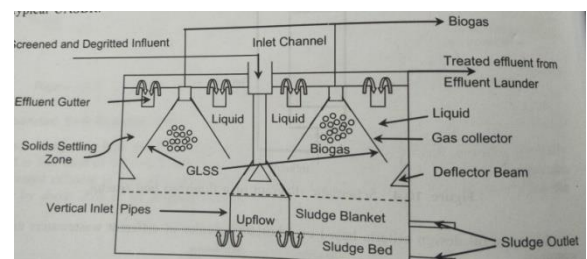


Fig 1:- Typical UASB reactor with GLSS

Sr no	Content	Values
01	Discharge m ³ /s	0.069
02	PH	7.62
03	Effluent BOD mg/l	49.4
04	Removed COD kg/d	567
05	Average flow m ³ /d	400
06	Peak flow m ³ /d	1200
07	HRT hr.	7.14
09	SRT day	63.36
10	Size of reactor L×B m	10×8
11	Height of reactor m	5.5
12	Volumetric organic loading kg-cod/m ³ d	2.02
13	Sulphate removal kg/ day	274.6
14	Volume of methane produced m ³ /day	226.8
15	Volume of biogas produced m ³	348.9
16	Number of gas collector	2
17	Aperture width m	0.1
18	Width of deflector beam m	0.221
19	Height of deflector beam m	0.5

IV. RESULT & DISCUSSION

From determination of characteristics of waste water from Raymond industry all influent characteristics are above mpcb and cpcb. But after treatments all characteristics are in range. And after design of UASB reactor it concludes that it produces 348.9m³/d Biogas .UASBR treatment saves the cost as no energy is required for aeration. UASB reactor treatment produced methane gas which can be used for heating and electricity production.

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