

# Modified WAS AND MSW Management

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**Abstract**— Disposal of biodegradable waste has become a stringent waste management and environmental issue. As a result, anaerobic digestion has become one of the best alternative technology to treat the municipal solid wastes and can be an important source of bio-energy. This study focuses on the evaluation of biogas and methane yields from the digestion and co-digestion of mixtures of WAS and MSW. These are compared with the results obtained from the digestion and co-digestion of mixtures containing WAS and MSW

**Index Terms**— biodegradable ,waste, waste management, bio-energy, co-digestion ,WAS ,MSW, methane

## 1 INTRODUCTION

Nowadays the problem of proper disposal of municipal solid waste (MSW) and waste activated (sewage) sludge (WAS) has become a major problem which is adversely affecting the environmental health.

These major wastes are consuming more and more space and energy. The WAS from the sewage treatment plants is dried and conveyed to the MSW plants for gaining efficiency in manure generation, while some is disposed by incineration and land-filling. But the WAS has the efficiency to digest any waste with the help of the active micro-organisms in simplified manner.

Thus, co-digestion of the MSW and WAS may be an attractive alternative for sustainable management of two separate waste streams produced in large amounts. This study evaluates results of an anaerobic co-digestion process for secondary sludge together with the MSW.

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## 2 PROCEDURE

Here in this project we are going to modify the design of STP for the proper digestion process of both WAS and MSW.

The MSW will be crushed and mixed with the WAS to obtain a waste mixture liquor. A huge mixer is designed for this cutting and mixing process.

The waste mixture from the mixer is then conveyed to the sludge digestion tank for further digestion.

All the processes carried out are anaerobic in nature.

The energy through the digestion of these wastes liberates in the form of CO<sub>2</sub> and CH<sub>4</sub>.

Solid wastes are converted into pump able slurring when mixed with liquid manure. This can result in easier handling both in the digestion process and afterwards.

The huge amount of sewage sludge and of Organic Fraction of Municipal Solid Waste (OFMSW), which are disposed of daily through incineration or land filling constitutes a huge environmental challenge.

The European Union regulations demand that biodegradable municipal waste to landfill sites must be reduced by 25% with respect to 1995 levels by 2010 with a further reduction of 65% 2016 [1,2].

According to recent estimates of the European Commission, about 88 Mt of bio-waste extracted from municipal solid waste [3].

Organic waste management through Anaerobic Digestion (AD) represents a useful solution to decrease the environmental impact caused by landfill disposal.

Improvement in methane yield through co-digestion was achieved with increasing amount of organic waste in wastewater sludge digestion [9,15].

(Mata-Alvarez, 2002) (Yen and Brune, 2007) (Fernández et al., 2005), offers great potential for the proper disposal of the organic fraction of solid waste coming from source or separate collection systems.

This type of treatment offers the possibility of using existing anaerobic reactors in wastewater treatment plants, with minor modifications and some additional requirements (Cecchi et al., 1996) (Gómez et al. 2006) (Neves et al., 2006) (Sosnowski et al., 2003) (Krupp et al., 2005)

## ADVANTAGES

This well managed system will aim to maximize methane production. This system provides source of energy with know net increase in atmospheric carbon which contributes to climate change. And contributes to reducing the greenhouse gases.

Land-filling and incineration is avoided.

This system provides double treatment system - aerobic digestion in mixer and anaerobic digestion in digester. This

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system helps to the agricultural need by providing a high NPK quality manure. This system helps to avoid the leachate generation and its treating cost. This system provides use of the excessive WAS produced daily on STP which has efficiency to digest any organic waste

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### 3 APPLICATION

The anaerobic digestion process gives the energy product as methane gas which can be used for the following purposes:

Generation of transportation fuels

Power generation and supply

Manufacturing and industrial works

Domestic purpose (Cooking)

This system gives high NPK quality manure which can be useful for agricultural purpose.

This system provides reuse of WAS for seeding the MSW.

### 4 CONCLUSION

In this paper, a novel treatment method of disposal of MSW and WAS is designed and developed for the community. This modified managerial system has become a necessity for the urban community. The modified treatment plant becomes an easy provision of manure for agriculture and CH

for domestic and industrial purpose

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