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Biogas Production from Wastewater Treatment Plant

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ABSTRACT

The increasing world population has the damage and the damages caused by the environment. Biogas refers to the production of usable gas from organic waste. The conversion of organic matter to carbon dioxide and methane in an oxygen-free medium is another expression. The activated sludge is burned to the agricultural land before it is burned as a fertilizer and it is converted to biogas energy in Wastewater Treatment Plants. The disposal and use of the wastes from the treatment plants makes a great contribution to the environment. Growing biogas production and use is of great importance in the world. The fields of use such as direct heating and heating, the use of motor fuel as a fuel, the use of turbine fuel and the production of electricity are gradually developing. This production is environmentally friendly and provides an economic contribution.

Key Words: Treatment Sludge, Biogas production

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INTRODUCTION

The rapidly developing technology and population growth in the globalizing world bring about various environmental problems. The accumulation, collection, transportation and disposal of all kinds of treatment sludge resulting from the purification of drinking water, human and industrial wastewaters, which are the indispensable source of life of living things, is a big problem. To eliminate or minimize this problem, the waste sludge from the treatment plants is converted to biogas. Some aerobic bacteria carry out the degradation in air and other anaerobic bacteria in the airless environment. Anaerobic decomposition is a complex biochemical process involving different microorganism groups, especially acid bacteria and methane bacteria. Animal and plant organic waste / residues are often either burned directly or are fed into agricultural soils. It is more common to use such wastes, especially by burning them in heat production. In this way, heat can not be produced in the desired feature, it is not possible to use the wastes as fertilizer after heat production. Biogas technology makes it possible to extract both energy and waste from organic waste or residues to the soil. It is an environmentally friendly energy and fertilizer source by assisting recycling of waste (Anonymous, 2018a).

Waste Sludge

The solids that can be collapsed or floated as a result of the application of physical, chemical and biological treatment processes to potable water and wastewater can be defined as mud. Water and wastewater treatment, due to the properties they carry, they should also be treated separately, they can be damaged in the environment when they are given to the environment without purification, solid and liquid mixture consists of substances. They must be treated with high amounts of organic matter, nutrients, pathogenic microorganisms and large amounts of water.

Waste Sludge Treatment

The presence of significant amounts of odor in the untreated wastewater, the sludge that must be removed and removed in the biological treatment, in a structure different from the organic materials in the raw wastewater, the tendency to decay and smell, only a small part of the sludge is composed of solids and a large part of the water, so large volumes of occupation and also because of the pathogenic microorganism must be treated before being removed (Yıldız et al., 2009). Biogas; refers to the production of gas that can be used from organic wastes. In other words, under the influence of microbiological flora in the oxygen-free environment, the conversion of organic matter into carbon dioxide and methane gas (Anonymous, 2007).

Biogas

It is a cheap, environmentally friendly energy and fertilizer source. Provides waste recovery. As a result of biogas production, weed seeds that can be found in animal manure lose their germination feature. As a result of biogas production, the smell of animal manure disappears to a great extent. Causes the loss of effectiveness of disease factors that threaten human health and groundwater caused by animal fertilizers. After biogas production, wastes are not destroyed and they are transformed into a more valuable organic fertilizer (Gizlenci et al., 2008).

Since the acquisition of biogas is mainly based on the decomposition of organic substances, vegetable waste or animal fertilizers can be used as the main ingredient. Used as the basic material in the world due to the fact that the used animal fertilizers become more useful as fermentation during the biogas conversion (Anonymous, 2018b). The materials used

for biogas production can be examined under three headings: animal fertilizers, organic wastes and industrial wastes.

Herbal Waste

Garden waste, Food waste, Industrial wastes; Agricultural wastes, wastes from forest industry, wastes from leather and textile industry, wastes from paper industry, food industry wastes, waste from vegetable, cereal, fruit and oil industry, sugar industry wastes, domestic solid wastes.

Energy

An indispensable need of human beings as an indicator of economic and social development. It is vital to increase the quality of energy and is vital for technological production and development. Finding and sustaining new and renewable energy resources has become a necessity today. One of the most important reasons for this is that the intensive consumption of fossil fuels is the source of greenhouse gas generation, causing global climate changes and many environmental pollution (Kılıç et al., 2007).

Today, a very large proportion of primary energy production is derived from fossil fuels. In 2006, the share of fossil resources in the world's primary energy production is about 79%, the share of renewable energy resources is 18% and the share of nuclear energy is 3% (Demirbaş, 2009).

CONCLUSION AND SUGGESTIONS

The energy potential that can be recovered from organic wastes in our country is quite high. Particularly in a country like Turkey potential of organic substances is too high, organic domestic waste and other organic waste with significant energy recovery facility can be provided that achieves the establishment of biogas (Öztürk et al., 2006).

Biogas energy is a very advantageous type of energy and is a renewable energy source with almost no disadvantage. Because when the biogas plant is installed, it does not cause any harm or discomfort to the environment and people. In order to increase the usage area of biogas, the ratio of methane (CH_4), which is the main source of energy in biogas, should be increased. By increasing the biogas plants, organic materials can be evaluated and energy can be produced (Ilkılıç & Deviren 2011).

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