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Animal Waste is a Good Source Converting for Biogas (Use of Energy Source)

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Introduction:

Biogas from an animal river. Organic matter is converted to biogas in anaerobic digestion and then methane and carbon dioxide in the sequence of bacterial groups. Most commercially available anaerobic digestion is a mixture of components and reactors operating at moderate temperatures. Animal waste is an important food and source of renewable energy. But the greatest danger to the environment is caused by too much waste being dumped into the ponds or left to rot in the air. Methane, nitrous oxide, ammonia, sulfide hydrogen, various organic compounds, and pollutants are all pollutants that can cause serious environmental problems and health problems. Biogas is a biomass fuel produced by biodegradation by anaerobic digestion where there is no oxygen or decay products, for example, biomass and manure. This process produces a mixture of gases — methane, especially carbon dioxide, and other trace elements such as hydrogen sulfide.

Biogas is produced by bacterial activity that breaks down parts of decaying manure due to the lack of oxygen in the airtight chamber. The process is called anaerobic digestion. Anaerobic digestion is the microbial fermentation of a substrate in the absence of oxygen. Compost is a mass-produced waste and varies in the size of the farm, the animal species and the nutrients found in animal feed. This waste product, if not properly managed, is a serious threat to the environment. This is because animal waste contains nitrogen and phosphorus in large quantities that are harmful to human health and aquatic life when these nutrients come into contact with water sources. To avoid environmental hazards, government agencies in developed countries regulate the storage, treatment, processing, management and use of compost land. In developing countries, such as today, such laws are rarely enforced. Therefore, animal waste is everywhere in the communities where animals are raised, as well as the ongoing cause of environmental hazards and social disturbances.

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The process of making biogas from raw materials supplied can be divided into four steps. The last three steps involve the different types of bacteria that break down the action step before them into the materials needed to build the final biogas from the organisms fed into the digester.

- Hydrolysis: this is the addition of water to natural unripe substances. It causes the breakdown of carbohydrates into sugars and glucose as well as the conversion of proteins into amino acids.
- The second step is the action of bacteria acting on acids from the first step to prepare for the next stage of the conversion process.
- This step involves another type of bacterium that works on the structures formed in the previous phase to transform them into forms suitable for the final stage of the anaerobic process.
- In this last step, the methane-producing bacteria convert the products of the previous steps into biogas containing mainly methane and carbon dioxide. This final product needs to be collected and can be stored for use as energy.

Types of digesters:-

There are many types of digesters depending on the materials used and the technology adopted. Red bricks, synthetic membranes and metal sheets are some of the materials that can be used to make digesters. The cost of starting and maintaining digesters varies with the materials used, the size and the technology adopted. Bricks and mortar are satisfactory but expensive, while metals are rapidly corroded by gases containing hydrogen sulfide. Some of the most popular digester types are classified into a fixed dome and biogas floating gas holders.

Fixed dome:

The fixed dome biogas plant has no moving parts. It has a mixing tank and an induction channel where livestock stock is transferred to the plant. The conversion of waste to biogas takes place in the main digester chamber. The gas mixture is collected through a gas pipe placed at the top of the digestion chamber. The remainder of the process is drained through an outlet and overflow tank, while the gas is collected in a pipe above the digester.

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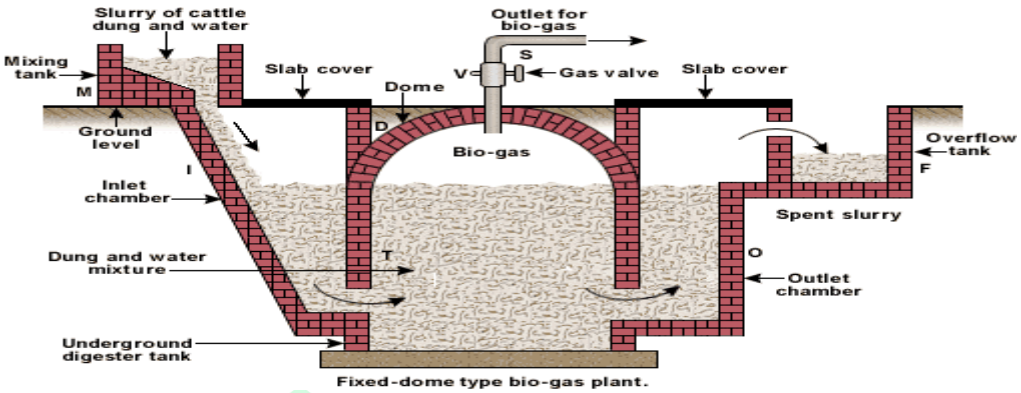

Fig: 1 fixed dome type bio gas plant

Floating type:

The floating type of biogas plant dome has a floating "balloon" on top of the digester that can be used to store biogas for much needed time and to monitor the amount of gas produced. The moving part of the floating gas type holder makes it more expensive to build and maintain compared to a fixed dome. However, there is an advantage for operators to be able to assess the amount of biogas already collected at any given time.

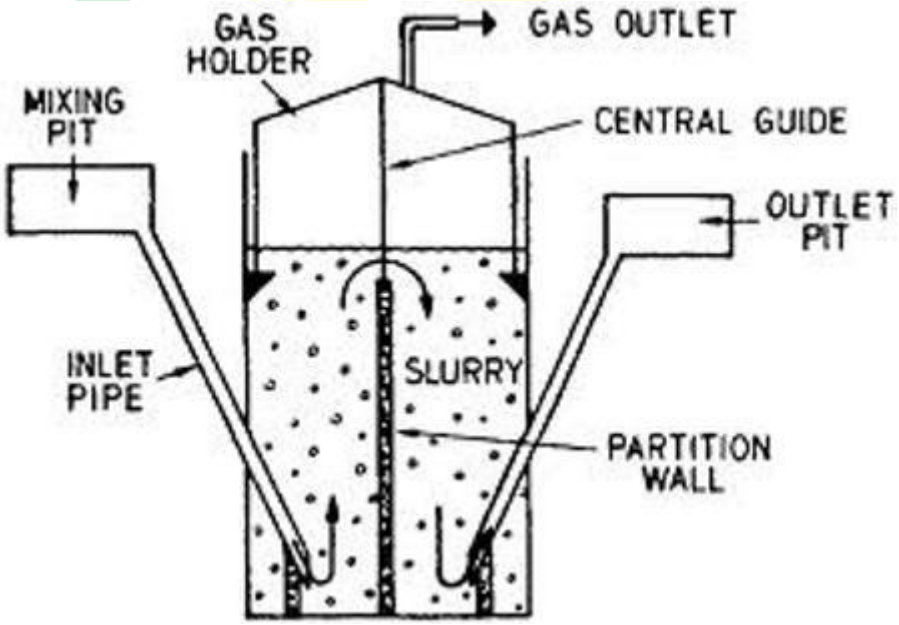

Fig: 2 floating type bio gas plant

Benefits of Biogas Plants:

Biogas plants have many benefits and benefits that translate into better farm economics and ensure better resource management and environment. Biogas produced on the farm adds the required energy to the farm. If most of the biogas is produced on a farm, some

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of it can be sold to neighbours for extra farm income. In addition, biogas production reduces dependence on fossil fuels and reduces further global warming caused by fossil fuels. In other words, biogas produces clean fuel that helps control the pollution of fossil fuels.

Reference:-

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