

"eBriefing on Resource Efficiency"

Reed Consulting Bangladesh Ltd.



July 2015

Organic or Food Waste Management / Bio-digesters

Food waste or loss is food that is discarded or uneaten. This is a growing area of concern causing costs to our community which come from collection and disposal of waste. Inefficient disposal of food waste results in pollution including Greenhouse Gas Emission. In many factories workers receive lunch/food from their employers. Some workers bring food from their home to eat in their work place. Significant quantities of waste are generated daily from leftover food. Usually these biodegradable food wastes are usually disposed at municipal waste collection points or dumped for land filling. When food waste degrades it pollutes the environment and produces Greenhouse Gases such as Methane (CH₄) and Carbon Dioxide (CO₂), which are released to the atmosphere. Methane possesses up to 25 times the Global Warming Potential (GWP) of CO₂. Controlled digestion of food waste can be a good source of biogas which can be used as an alternative energy for cooking or other use. This digestion of food waste would reduce global warming and climate change and also have an economic as well as environmental benefit for the company.

To digest food waste or kitchen waste which is rich in organic matters in order to produce biogas, a bio-digester could be the right solution. It will carry out aerobic digestion very efficiently. Many microorganisms affect anaerobic digestion, including acetic acid-forming bacteria (acetogens) and methane-forming archaea (methanogens). These organisms promote a number of chemical processes in converting the biomass to biogas.

The following is an example of a single-stage bio-digester.

All of the biological reactions occur within a single, sealed reactor or holding tank. The most popular single stage digester is made of plastic or polyethylene bags which makes it lightweight, flexible, durable and strong. Usually the digester bag material is composed of a double layer; 300 micron UV treated polythene reinforced with fiberglass. The potential lifetime, according to the suppliers is estimated to be up to 15 years. For

1 ton of food waste the requirement is of a 100 cubic meter bio-digester. Even for 10 kg food waste it could be managed by an 1 cubic meter bio-digester. Return of investment (ROI) is approximately 12 – 14 months.

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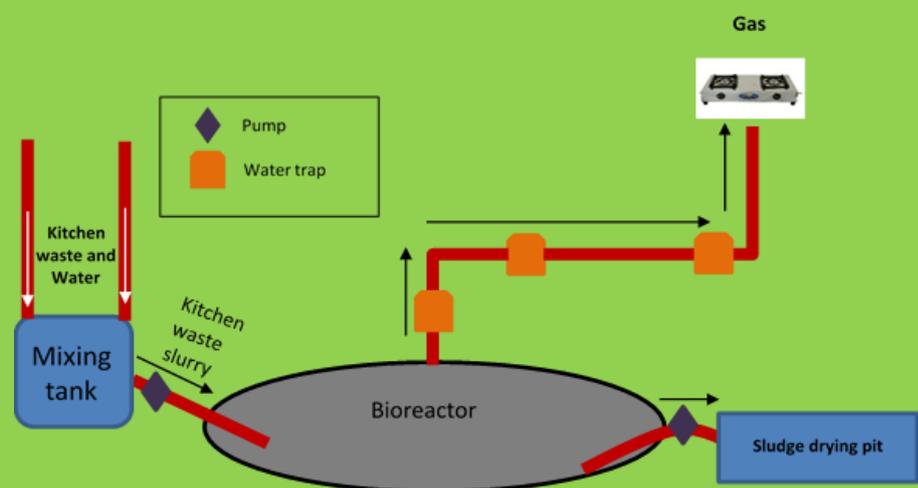


Figure: Layout of single stage bio-digester

RCB provides consultancy in Energy Efficiency, Production Engineering, Process Improvement, Water and Waste Minimisation.

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