

Biogas – The power of manure

Biogas is a gas consisting mainly of methane, CH₄, which is the combustible portion of the gas.

Biogas can be made of all organic material that decomposes in a process without a supply of oxygen.

In the biogas plant biogas is produced of pig manure or cow dung.

Pig manure or cow dung are mixed with water until it becomes a thin gruel.

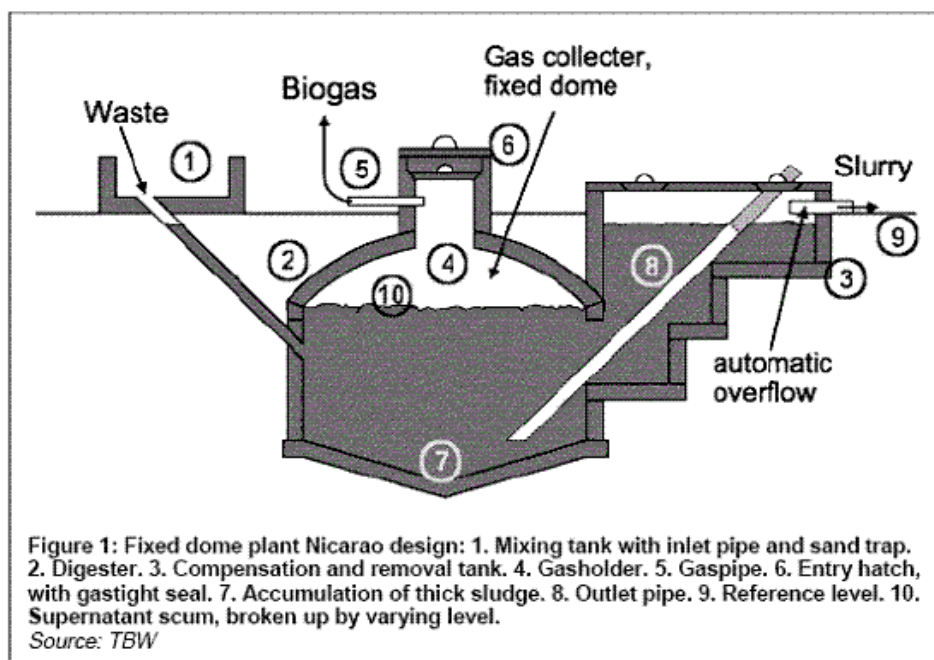
It flows into the biogas digester and the bacteria starts its process. After a time, all that can be turned into biogas has been consumed. The time it takes depends on the temperature. The biogas plant has no moving parts, so-called "Fixed dome". When the gas is produced it exceeds the pressure in the tank, and the liquid mass is displaced into the expansion chamber (8.). When the gas is consumed the pressure and the liquid mass flows back into the digester with the new mixture. It is important that the gas consumed, because then we get a natural agitation in the tank when the mass moves up and down.

The plant is sized of how many zero grazing cows you have, and how many people you do cooking for. The biogas is introduced into the gas burners in the kitchen.



The biogas plant consists of a mixing vessel (1), biogas digester (2) and expansion chamber (8).

The excess mass from the expansion chamber is a moist and nutritious blend, used for fertilizer in the vegetable garden. The mixture contains water, phosphorus and other nutrients that plants need.



How to run the Biogas-plant

It's very important to fill the plant every day, because the process needs fresh dung to be continuing. If you stop the feeding, the gas production will be reduced, and it will stop after a couple of days.

The biogas has to be burnt every day. It's not possible to store the biogas for use another day.

During the night when the biogas is produced, the level (10) in the digester will go down when the gas volume (4) is increasing. During the daytime when you burn the biogas, the process are opposite. In this cycle, the slurry in the biogas digester will be properly mixed, and it will prevent clogging. If the scum is being too hard it will prevent the biogas to enter into the gasholder (4).

Fertilizer

The slurry from the biogas digester (bio fertilizer) is a high quality fertilizer. Every day there will be an overflow from the expansion chamber. This slurry contains water, nitrogen, phosphorus and other nutrients for plants.

When you plant the maize, peace etc you can fill the hole with slurry together with the seed.

The slurry can also be used as fertilizer for cabbage, sukuma wiki, tomatoes and all other vegetables. The soil will keep moist for a longer period when you use the slurry in the fields. The slurry together with a drip watering kit is a very good solution for all year production. You will need a reliable water source.

When you use the bio slurry as fertilizer, you will get bigger and faster growing plants.



Shamba with drip watering



Shamba with bio slurry as fertilizer



Maize with bio fertilizer from the biogas plant

This biogas plant is sponsored by the NGO Help to Self-help in Africa. www.selvhjelpiafrika.org