



BIOGAS

Knysna Installation



Licenced installers and distributors for

BiogasPro
agama

PROUDLY SUPPORTING

SABIA
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BIOGAS INDUSTRY ASSOCIATION

Overview

Biogas systems use bacteria to break down wet organic matter. Traditionally these are large scale heated systems, however advances in technology has allowed the systems to be scaled down and as such they are highly effective in dealing with organic waste in sensitive areas. Biogas systems are used to process organic waste in areas such as Chobe National Park and also the Renosterveld Conservation area.

How biogas works

In our biogas plants, the slurry container and gas container are combined, so that the gas collects under a rigid dome over the slurry. As the slurry breaks down, the biogas which is produced pushes some of the slurry into a separate reservoir. When the biogas is taken off, the slurry flows back.

A biogas plant needs some methane-producing bacteria to get it started. Once the plant is producing biogas, the bacteria reproduce and keep the process going. Cow manure is the best starter.

Waste must be mixed with water to ensure the process works. A ratio of about 1:3 is normal.

The digestate is an excellent organic fertilizer, with high and available nitrogen factors which are safe to be returned to the environment.

This Project – Feasibility

The project has not as yet been viewed however it is possible to work on a budget and technical solution for review at this stage.

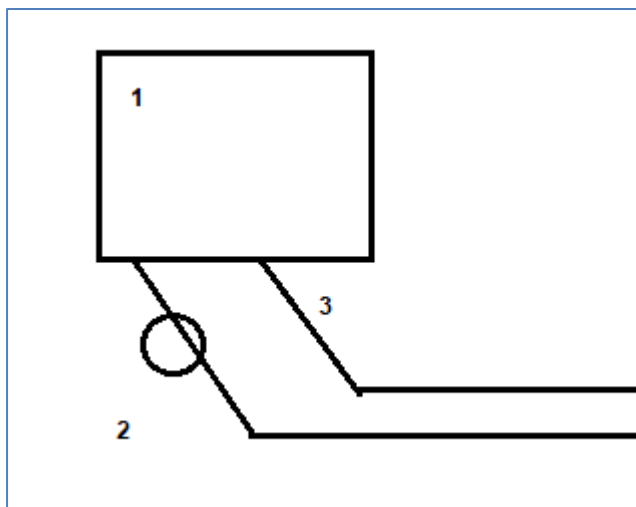
Systems offered



Biogas Pro 6

This all-in-one system is excellent for all round organic waste disposal, able to look after kitchen, garden and human waste. The system is self-regulating and has on-board hydraulically pressurised biogas storage. Due to the need for human waste management it is highly recommended that two BP6 systems are placed in series to ensure no waste is allowed through without being processed.

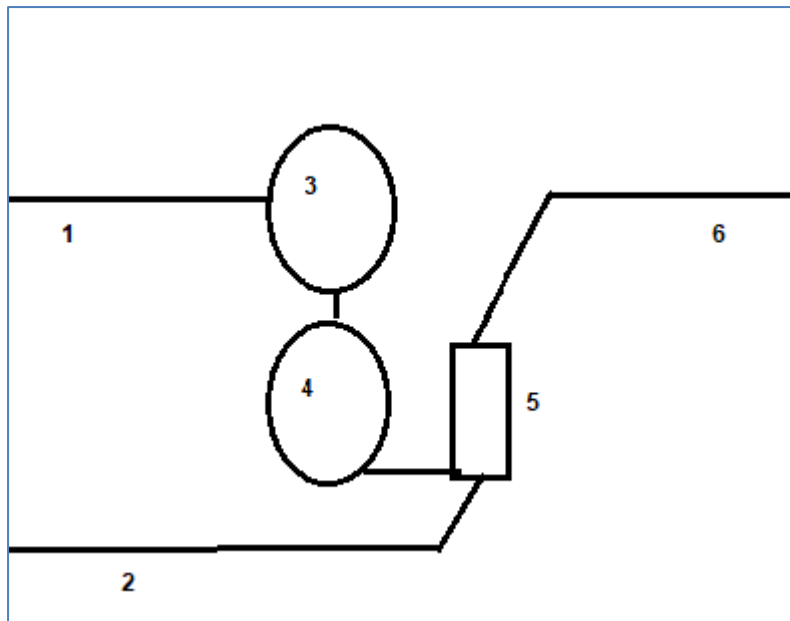
The best method for setting up a digester system with so many households reporting to the unit would be for the black and grey water to be split.



1. Household
2. Grey water line with sand filter
3. Black water line

It is preferable that the waste water from the household is separated into grey water being mainly the washing machine and shower hand basin water and the black water with a feed from the kitchen sink if possible. A exterior s/steel sink with a small macerator mounted (1 H/p) into which food scraps are added to improve the performance of the digester. Gas is returned to the house and can be used for cooking and or water heating.

The digesters are laid out as follows:



1. Black water inlet 160mm (suggested)
2. Grey water inlet 110mm
3. Primary Digester
4. Secondary digester
5. Polishing tank
6. Underground seep away system

The AGAMA Biogas system is specifically designed to retain solid matter in the digester. As the system breaks down this waste including items such as toilet paper. Other solids such as sanitary pads and nappies must not be added to the system. Also it must be noted that the system must have probiotic cleaners and not bleach based products as this will stop the biological action.

This method removes 93% of the pathogens in the waste and allows just the water and minerals to pass through. By doubling the system and making one digester feed to the next it creates a safe barrier to contamination. Post the digesters there is a polishing tank which allows air to mix with the slurry ending the anaerobic process and allowing the slurry to be used safely in the environment. Some slurry is returned to the primary digester as seeding material ensuring smooth operation, excess slurry is allowed to seep away sub surface (30cm) through a multi seep pipe which has no damage or negative impact on the environment.

Biogas slurry - Impact on the environment

Biogas slurry from the AGAMA biogas/polishing system.

Waste input – Human waste with some food and plant waste

Make up – 3 – 5% floating inert solid (non-digestible matter)

97-95% liquid (Minerally loaded water)

Available N 590 (mg/Kg)

Available P 84 (mg/Kg)

Available K2 800 (mg/Kg)

This system given the feedstock does not have a notable presence of heavy metals.

The product can be sent via a pipe using a coarse water pump up to 50m

Product is released sub-surface.



Final product from and Agama biogas and polishing system