



AGAMA BIOGASPRO – Information Overview - 2010

The AGAMA **BIOGASPRO** is a 'one stop shop' that enables you to extend your existing sustainable living activities and integrate your current waste management systems - composting, recycling, wastewater treatment and re-use - *and* produce renewable energy on-site.

You can achieve this with the **BIOGASPRO**, a living "machine" that has a range of beneficial bacteria as its "engine". These bacteria consume the biodegradable materials – biowastes - they are fed. The results are magic – free fuel and fantastic fertiliser!

The **BIOGASPRO** is like a sealed septic tank, to which various biowastes can be added providing an integrated solid and liquid waste processing facility. Now you can think of waste as a useful resource that provides energy, valuable nutrients and pre-treated water.

The free fuel comes in the form of biogas, a natural gas consisting primarily of methane, which is stored in the top of the **BIOGASPRO** and piped directly to the gas cooker. The felt experience of cooking on biogas is identical to cooking on liquefied petroleum gas (LPG). However, biogas cannot be connected up directly to LPG appliances. It must be used on a purpose-built biogas appliance. Biogas can also be 'cleaned' and used for electricity generation, but this is usually only worth doing in larger applications.

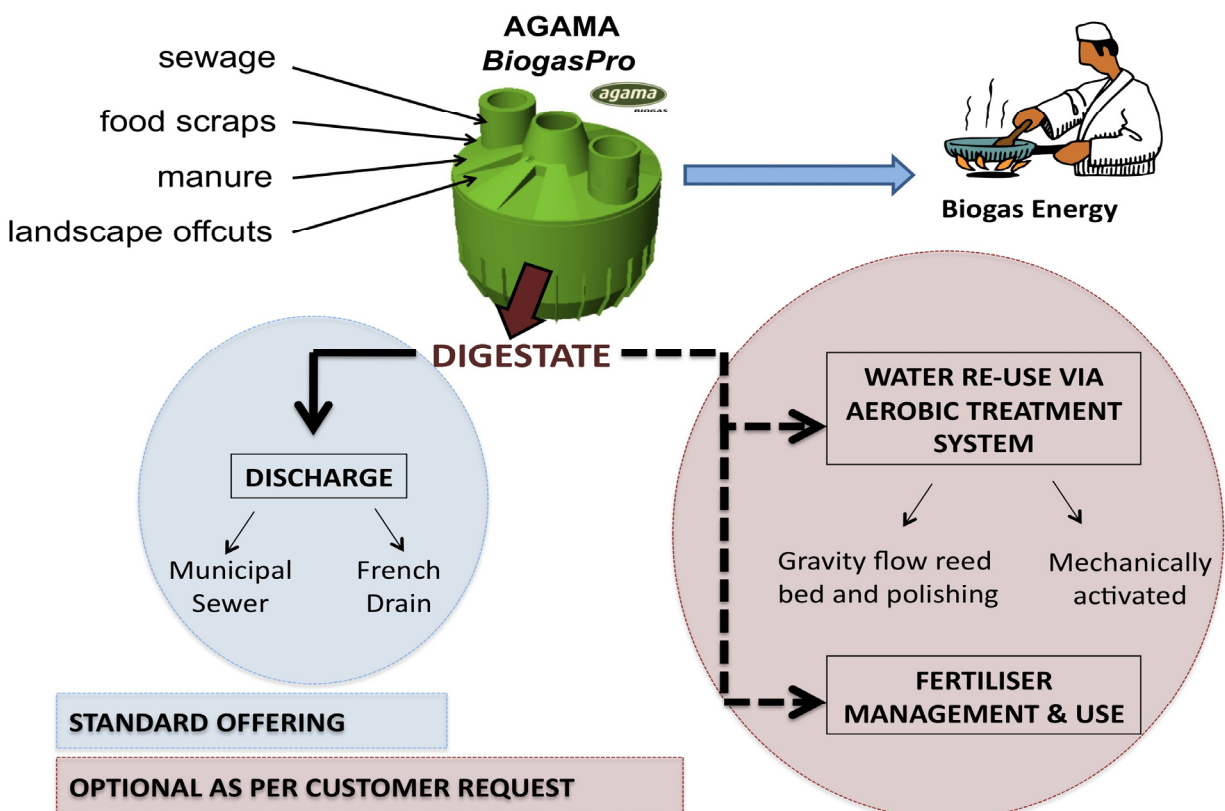
What are the benefits?

- Convenient, integrated waste management
- Renewable source of fuel
- Avoided waste to landfill
- Free fertiliser
- Water re-use
- Reduced carbon footprint

The **BIOGASPRO** specifications

The **BIOGASPRO** is 6m³ (6000 litres) total capacity. It is 2.2m in diameter and 2.5m high (including inlet, outlet and gas pipe risers). It can produce a nominal amount of 2m³ of biogas every day, which is equivalent to 4 hours burning time, 0.8kg LPG, or 3.5 kWh continuous electrical output. The biogas is captured and stored within the tank.

To produce the maximum possible amount of biogas, the **BIOGASPRO** should be fed with up to 40kg of mixed organic raw material daily. The **BIOGASPRO** can handle a maximum of 1000 litres of water per day.





Feeding a digester with food waste

Feeding the **BIOGASPRO**

The more biodegradable material the **BIOGASPRO** is fed, the more biogas energy it will produce. Like all living beings its digestive system is sensitive to sudden variations in diet, the daily feeding regime should therefore remain as consistent as possible.

A rule of thumb is that any organic biodegradable material (except woody material) can be fed to the **BIOGASPRO**. Different feedstocks have different gas producing potentials, resulting in varying daily outputs. A kilogram of food waste yields 2 – 3 times the amount of biogas a kilogram of cow manure produces!

Recommended raw material feedstock types include:

- Kitchen Scraps
- Manure
- Landscape off-cuts (grass cuttings and other non-lignin materials)
- Sewage



Cooking on biogas

Other things to note ...

No detergents, bleaches, acids etc should go into the system. Biodegradable compounds should be used at all times to avoid killing the good, gas-producing bacteria.

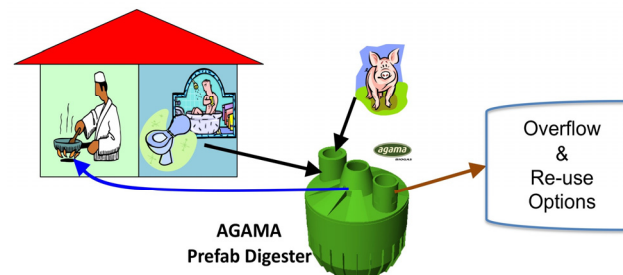
Non-biodegradable materials such as sand, plastic bags etc will block the system.

Provided no inorganic, difficult to digest or fibrous material enters the **BIOGASPRO**, sludge accumulation is very slow and the Digester should only need to be pumped out about once every 10 years or so.

The digestive bacteria get lethargic in cool weather resulting in up to one third less gas production in winter.

Further applications

Any system components downstream of the **BIOGASPRO** will be subject to the owner's preference and may be influenced by environmental parameters. AGAMA Biogas or other specialists can design these systems separately.



The **BIOGASPRO** digestate can be used in various ways:

Discharge into a sewer or French drain. This is the cheapest and simplest application, but yields no fertiliser benefits. This is the standard offering.

Water re-use which is achieved by either passive or mechanical post-digester aerobic treatment systems. The former includes a reedbed and polishing pond, while the latter includes a mechanically driven system. Water quality and the application will determine the specific aerobic treatment requirements.

Fertiliser management and use which might include fertiliser drying beds or a liquid fertilizer system.

The optimal arrangement is a combined bio-energy and water treatment system where a useful biomass is grown from the nutrients in the water as part of the aerobic stage of the wastewater treatment system, and additional biogas is produced.

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