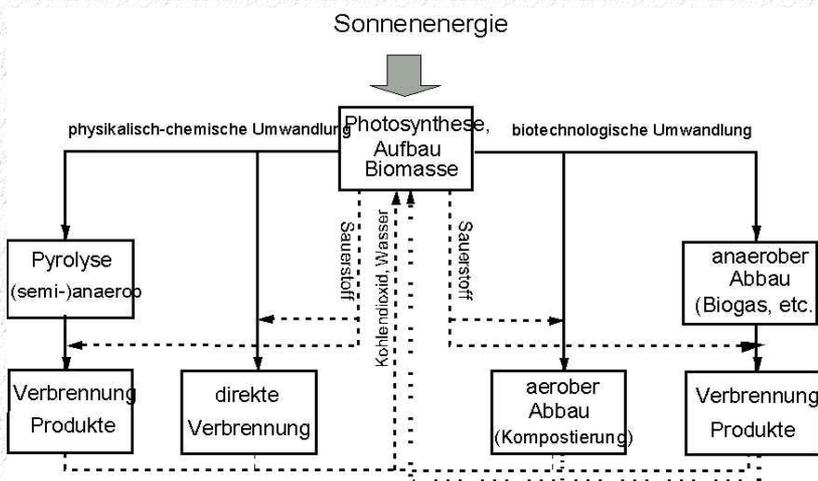


Biomass Fermentation: Fermentogas – the clean Fuelsaver

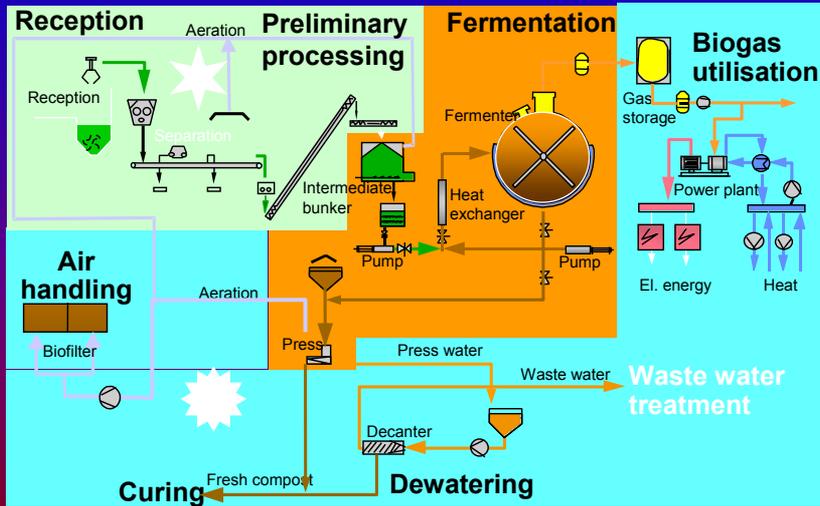
- Markus Real, Omega Real Ltd. Brasil*
- André de Reynier, Edra, Brasil*
- Theo Huwyler, Kompogas, Switzerland

*Bagasse Biorefining Ltd

What are the options for Biomass?



Source: Dr. Edelmann, Arbi



Source, Kompogas

What kind of waste can be processed?



Source, Kompogas

What are the optimal input properties?

Dry Substance (DS)	30 ... 45 %
Volatile Solids (VS)	55 ... 75 % (of D
Dimensions	< 40 mm
pH	4.5 ... 7
K-N	< 4 g/kg
C/N	> 18

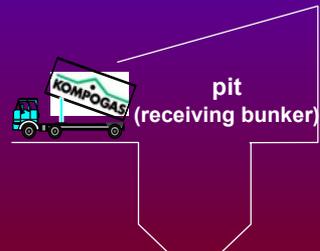


Source, Kompogas



Most of the biogenous waste can be processed.

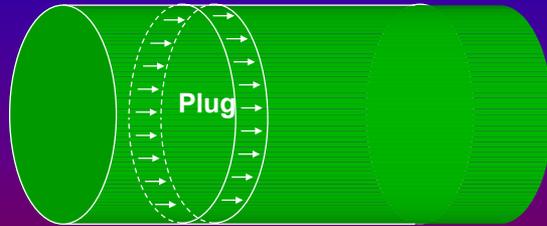
What receiving system do I need?



Flexible integration in different plant concepts.

↳ Dry system, Plug flow

- Defined retention time
- All conditions under control (acid profile)
- Defined order of biological process stages
- No short circuits



Source, Kompogas

✓ Controlled, hygienic. Minimal water addition.

↳ How can I use biogas?

Methane	CH ₄	97 %
Carbon dioxide	CO ₂	3 %



KOMPO-GAS is the only system which offers biogas at fuel stations.

Methane	CH ₄	58 %
Carbon dioxide	CO ₂	42 %
Hydrogen sulphide	H ₂ S	200 ppm



Production of electrical and thermal energy.

How much energy can be transferred?



10,000 t biogenous feedstock

produces



1,180,000 Nm³ Fermento-GAS



which allows production of

2,200,000 kWh electrical energy and



3,800,000 kWh thermal energy.



1kg biogenous feedstock = 5.5h of light with 40W bulb.

Project Fermentogas – the clean fuelsaver starting points

- Proven modular fermentation technology, based on Kompogas Know-how
- Proven technology for byfueling existing Dieselmotors with Fermentogas
- Proven for various feedstocks materials

Project Fermentogas, the fuelsaver:

- Rural electrification, fueling existing dieselpowered minigrids, minimal size 50 kW
- Fuelsaver for multimegawatt Dieselpower plants
- New biomass power plants to generate electricity by fermentation instead of incineration. (in competition to burning biomass and powering conventional steam turbines).

Project Fermentogas – action plan

- Feasibility study (cost analysis for the three markets evaluated)
- Detail design pilotplant, financing
- Pilotplant, learning curve for the technology in rural environment
- large scale introduction of technology, modular technology, local construction