

Biogas Production

Anaerobic Digestion

Background

The study was undertaken in a large swine production facility in Thailand. The farm rears 250,000 pigs. Research was conducted to determine the effect of adding BiOWiSH™ Odor into anaerobic digesters.

Research Conditions

BiOWiSH™ Odor was added into 4 test digester units. Another 4 identical digesters were used as controls. Each digester had 1.1 tons (1,000kg) of pig manure. Gas composition was assessed using GCMS analysis.

Research Method

Dilution

Added 10g of BiOWiSH™ Odor into 10L of water per treatment.

Dilution rate = 0.134oz/Gal (1,000mg/L).

Solution was left for 30 minutes to activate.

Dosage

Initial Application

Each digester was treated using the following starter doses on days 1-3:

Day	Qty Solution	Equivalent Qty BiOWiSH™	Qty Manure	Final Application Rate (gm)	Final Application Rate (oz)	PPM
1	1,000mL	1.0g	1,000kg	1.0g / 1,000kg	0.032oz / ton	1.0ppm
2	500mL	0.5g	1,000kg	0.5g / 1,000kg	0.016oz / ton	0.5ppm
3	200mL	0.2g	1,000kg	0.2g / 1,000kg	0.0064oz / ton	0.2ppm

Ongoing Application

Day	Qty Solution	Equivalent Qty BiOWiSH™	Qty Manure	Final Application Rate (gm)	Final Application Rate (oz)	PPM
weekly	500mL	0.5g	1,000kg	0.5g / tonne	0.016oz / ton	0.5ppm

BiOWiSH™ Odor Benefits

- Increases gas volume
- Increases methane content
- Reduces ammonia content
- Reduces hydrogen sulphide content
- Improves capacity
- Eliminates odors
- 100% natural and non-toxic

Available sizes

- 3.5oz/100g
- 2.2lb/1kg



Results

Increase in methane production

Tests in digester units have shown an increase in biogas production by 35-40%. This result improves the energy production and economics of a biogas plant.

Reduction in CO₂ emissions

CO₂ levels off-gassed during decomposition of organic wastes are reduced by 50-55%. This result has a large and direct greenhouse gas emissions benefit.

Temperature

Due to the rapid waste decomposition achieved by BiOWiSH™, thermophilic temperatures of approx 60°C were achieved. Many natural biocatalysts cannot tolerate this temperature.

Sludge Reduction & Quality

Due to rapid decomposition, BiOWiSH™ will reduce the quantity of final sludge produced. Evidence suggests that this will be reduced by 10-20% over a 3 day total detention period in a digester relative to natural bacteria. In addition the quality of sludge in terms of contaminants, pathogens and odour will be significantly improved.

Plant & Equipment

Corrosion of plant equipment is prevented due to removal of sulphides and breakdown of bio-films that harbour sulphide producing bacteria.

Anaerobic Digester Results

Biogas	Control	BiOWiSH™ Treated
CH ₄	25-30%	60-65%
NH ₃	2-3%	0.1%
H ₂ S	0.5-1.0%	0.01%
CO ₂	67-75%	30-35%



Primary Clarifier



Anerobic Digester Unit

Key Conclusions

1. Significant improvement and increase in methane production.
2. Significant reduction in CO₂ emissions.
3. Noticable reduction in contaminant gases (H₂S, NH₃).

About BiOWiSH™ Odor

The result of over 18 years of research and development, BiOWiSH™ is a powerful blend of biocatalysts that breaks down complex organic molecules to help eliminate waste, reduce odors, improve soil fertility and enhance water quality, among other uses. 100% natural and non-toxic, BiOWiSH™ is safe for everyday use in a wide range of consumer and industrial products. It has been proven to solve problems in environmental management (including wastewater, solid waste, soil and water remediation and industrial emissions), as well as agriculture. BiOWiSH™ products are used extensively and available in Asia, Australia, Europe, North America and Latin America.

Developed specially for the Solid Waste industry, BiOWiSH™ Odor increases biogas production and significantly reduces carbon dioxide release. BiOWiSH™ Odor increases the rate of hydrolysis providing optimum conditions for the methane phase bacteria resulting in a methane increase of up to 40% and a reduction in carbon dioxide of up to 55%, depending upon waste composition and environmental conditions.

Contacts

BiOWiSH Technologies

T: +1 312 572 6700

Email: animalag@biowishtech.com

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www.biowishtech.com

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