Senate Submission 8th April 2011

Aerochamber Carbon Abatement Technology

Design Principles

The Aerochamber composting technology has developed a design methodology for the aerobic decomposition of the putrescible waste stream.

The design methodology supplies a maximum of ambient oxygen to the centre of the composting pile, which is required for the abatement of CO2-e emissions produced from the nitrogen content of the putrescible solid waste stream.

The high biodegradation rate achieved for a twelve month test evaluation period, as seen in the Aerochamber Website www.aerochamber.com.au is indicative of the Aerochambers design methodology to supply a maximum amount of ambient oxygen to the centre of the composting pile.

Twelve Month Test Evaluation Report Completed in Brisbane December 2009

Rate of Biodegradation for a 12 Month Period

The 612 litre Aerochamber biodegraded 7.2 times its volume capacity, composting 1876.5 KG, and 4410.5 litres of putrescible waste.

The 300 litre Aerochamber, biodegraded 6.8 times its volume capacity, composting 876.2 KG, and 2049.4 litres of putrescible waste

Twelve Month Test Evaluation: Abated Landfill Carbon Emissions Savings

The landfill carbon emissions savings for Australia is tonnage composted x **743 KG CO2-e/TFW.** (tonne of food waste) (Reference *Environmental Expert.com)* http://www.environmental.com/

The **612 litre** Aerochamber calculation is 1.8765 tonnes x 743 KG CO2-e = **1394.2 KG CO2-e of annual savings.**

The **300 litre** Aerochamber calculation is .8762 tonnes x 743 KG CO2-e = **651 KG CO2-e of annual savings.**

There is a correlation between carbon abatement and the biodegradation rate when composting biodegradable waste ie: the lower the biodegradation rate increases the

potential for higher CO2-e emissions, the higher the biodegradation rate the lower the potential for CO2-e emissions.

Transport Carbon Emission Savings

The transport CO2-e savings is formatted for waste authorities to calculate their transport savings, Refer to the spreadsheets located on the website: http://www.aerochamber.com.au Spreadsheets located on the Carbon Abatement page of the Aerochamber website.

Diverting putrescible waste from landfill as a project to avoid emissions of greenhouse gases, compared to the operation of a landfill facility.

Currently there are no known competitive composting systems available that decompose putrescible waste totally aerobically, and that achieves a biodegradation rate of approximately seven times the volume capacity, the biodegradation rate will vary in countries with different climate zones.

Carbon Storage

Growing medium produced for the Twelve Month Test Evaluation Period, (Carbon Storage).

The **612 litre** Aerochamber produced **519 KG / 667 litres**, of growing medium, in the twelve month test evaluation.

The **300 litre** Aerochamber produced **206 KG / 278 litres** of growing medium, in the twelve month test evaluation.

The amount of growing medium produced will fluctuate in different climate zones, directly related to the biodegradation rate.

The large amount of growing medium produced from each Aerochamber for the twelve month period will produce vegetation for further carbon storage.

The organic material produced from the biodegradation of the putrescible waste stream, is an ideal growing medium to improve farm productivity, and biodiversity, and improve soil moisture retention, for natural resource management.

The plant growth shown in the Aerochamber website thumb nails, has had no fertilizer, insecticides, or fungicides applied, the results is evident of the value of the Aerochamber compost material for biodiversity producing aerobic microbial activity, and water retention.

Project Baseline

The baseline for the Aerochamber technology is separating and composting the putrescible waste from the Municipal Solid Waste Stream, at the beginning of the waste stream cycle, alleviating and saving transport CO2-e emissions from curbside to landfill, and landfill CO2-e emissions savings.

Municipal Waste Authorities

Governments legislation eg: carbon pricing and the introduction of the CPRS legislation, will encourage waste authorities to plan for a zero waste policy, and for reducing their carbon footprint.

This legislation will enforce Waste Authorities and the general public to take a positive action to recycle the biodegradable waste from the MSW stream, diverting this waste from landfill.

The Aerochamber technology is designed for domestic and semi commercial use, and has the potential use has large applications for Waste Authorities, and the general public.

Additional Comments

All animal manure including animal urine residue can be satisfactory composted in the Aerochamber composter, incorporated with a wider range of the C/N (Carbon / Nitrogen) ratio material, for producing ideal compost.

As practiced in Europe, deep litter from in wintering of livestock is incorporated in the soil, producing outstanding results in crop yields and for biodiversity.

At the onset of depositing the animal manure in the Aerochamber composting system, all potential emissions are abated.

To maximise on the biodiversity value of the compost material, as practiced in Europe with deep litter from in wintering of livestock, the deep litter, or compost material must be incorporated, or buried in the soil, for aerobic, microbial activity to continue, and survive.

When compost material is spread on top of the ground, it quickly oxidises, leaches, and dries out, with little beneficial value to the soil.

Microbial activity requires a warm moist aerobic environment to survive.
For sustainable biodiversity, these features are indicative of the Aerochamber design methodology.

Applicant details

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Expert consultation

Have you consulted technical experts in the development of this methodology? If yes, please provide names and affiliations.		
Name	*Affiliation*	*Does this expert endorse all or part of the draft methodology?*
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