



Technology/Service: Ecogi organic waste recovery technology

Information by: Lars Ravn Nielsen

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COMPANY INFORMATION

Company: Gemidan Ecogi

Phone: +45 76 78 21 01

Web Site: <http://www.ecogi.dk/en/frontpage>

Address: Drivervej 8

City: Holsted

State: Denmark

Zip Code: DK-6670

TECHNICAL CONTACT

Name: Lars Ravn Nielsen

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Contact:

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INITIAL TECHNOLOGY OVERVIEW

This information is to guide in the development of a more specific and detailed Technology Information Request. Please answer the following questions for each Technology or Service Provided.

What is the name of the technology or service you provide?

The ECOGI pre-treatment technology processes source separated food waste and produces a high-quality bio-pulp. The bio-pulp becomes a feedstock for anaerobic digestion contributing to the production of renewable energy.

Describe how this technology is used in a larger Nutrient Management System. Please be as detailed as possible.

ECOGI recovers a high fraction of the organic matter in source separated food waste leaving a methane content of 95 % when it enters the biogas plant. In addition, the ECOGI technology separates out almost all impurities in the process. A number of tests show purity levels up to 99.9 % in the bio-pulp. This makes the bio-pulp highly applicable for re-use after it has been through a biogas plant. Hence, adding food waste to the biogas plant does not compromise the applicability of the degassed biogas or *digestate*; rather, the high pulp quality yields a nutrient rich organic fertilizer for agricultural crops. With a dry matter of around 17 %, the bio-pulp can be either pumped or trucked to a nearby facility.

How many systems do you have installed on dairy farms or other livestock operations?

SYSTEMS	NUMBER OF SITES	SIZE OF INSTALLATIONS
Dairy	0	0
Pork	0	
Poultry	0	

What's the smallest and largest farm using your system?

Gemidan Ecogi has no plant next to a farm

Does this technology have a 12-month record of reliable performance on at least three dairy farms?

No

Do you have a preferred region or area for the location of projects?

No

Input and output of your unit/system – do you have a mass balance analysis?

If a mass balance is available, please include below or attach as a separate document.

“A mass balance can be prepared, as needed for a project. The information is client confidential”.

Input material description and characteristics:

For example: raw manure, digestate, screened digestate, suitable non-farm feedstocks, other.

Source separated food waste (such as tomato cans, etc.) from caterers, food manufacturers and the likes.

Does the technology treat the full manure stream for a farm or a fraction of the stream?

No

Do you consider this a mature system or ongoing farm development?

The ECOGI technology has been in operation since 2012 and should be considered a mature technology

Any weather constraints? Yes No If so, please describe.

Any bedding constraints Yes No If so, please describe.

Output material description and characteristics:

Please include the % of the total stream for each material, i.e. 10% fiber and 90% screened liquid by weight.

95 % recovery of organic fraction

99.9 % purity in the bio-pulp

Do the Outputs of the process have a resale market identified? Yes No

If so, under what brand name or who is the contract with?

Yes, the bio-pulp can be sold to biogas owners, which increases biogas and thereby renewable energy production.

Is this process scalable and to what extent (top and bottom limits)? Yes No If so, please describe.

One Ecogi has a capacity on 50.000 tons waste/year and you can combine more lines

Do you have a known scaling factor? Yes No If so, please describe.

50.000 tons for each line

Does this technology require any air input? Yes No

No air input needed

What is the preferred air connection? For example: psi, fitting size, air quality.
If not distributed by the system, please list each connected device.

No connection

Does this technology require any water input? Yes No If so, please describe.

Yes - the waste will be mixed with water

What is the preferred water connection? For example: psi, fitting size, water quality, gpm.
If not distributed by the system, please list each connected device.

Any standard connection

Does this technology require any electrical input? Yes No If so, please describe.

Electric consumption is 18 kWh/ton of threated waste

What is the preferred electrical connection? For example: phase #, voltage, full load amps.
If not distributed by the system, please list each connected device.

Standard Connection

Does this technology require any mechanical input? Yes No If so, please describe.

No mechanical input

What is the preferred mechanical connection? For example: horsepower, connection, rpms.
If not distributed by the system, please list each connected device.

No mechanical connection

Does this system require any special plumbing? Yes No If so, please describe what is required.

No – there is no fluid outlet from the system.

Does this system require any special foundations or pads? Yes No If so, please describe.

There will be special foundations for some of the bigger components

Do you consider this technology part of a larger system that you provide? Yes No If so, please describe.

Does your system require any other components that you do not provide or are not included in your proposal Yes
No If so, please describe.

To get the green energy out of the bio-pulp you need a digester

How is the system delivered to the site? For example: skid mounted, assembled on site, constructed on site.

Assembled on site

Is this system portable or configured in such a way that it could be easily transported for use in several locations?

Yes No If so, please describe.

The current systems are not portable

Has your technology been accepted by the NRCS and is it included into a practice standard? Yes No

If so, please describe if necessary.

Are there any unusable or hazardous byproducts of this process? Yes No

If so, please describe the product and recommended means of disposal.

What spare parts and redundant components are included with the system?

The ECOGI technology separates plastic and metals. The so-called "reject" can be sold as recyclables.

How is the system controlled and what are the components and capabilities of the control system?

The system is controlled by our own SCADA system

What is the usable life of the system?

With proper O/M, the system should operate min. 15 years

What is the salvage value at the end of the usable life?

All the components are made of steel/stainless steel and the salvage value is the "metal value"

What is the educational and technical level of competence for the operation of the system?

Trained labor should be able to operate the system.

What level of maintenance is required for the system?

Please indicate if rebuilds or major components must be replaced and what the frequency is for these components.

Component parts require maintenance and replacement per maintenance schedule.

Are consumables used in the process? Yes No

Please provide the nature and purchase relationship for these consumables. For example: proprietary, special contract, generally available.

No consumables are needed

Which of these NRCS codes would your technology be classified under? *Check all that apply. Add if necessary.*

CODE	NRCS DESCRIPTION (assuming the grinder is part of a manure digester system)	CHECK ALL THAT APPLY
472	Access Control	<input type="checkbox"/>
560	Access Road	<input type="checkbox"/>
309	Agrichemical Handling	<input type="checkbox"/>
371	Air Filtration and Scrubbing	<input type="checkbox"/>
591	Amendments for the Treatment of Agricultural Waste	<input type="checkbox"/>
366	Anaerobic Digester	<input type="checkbox"/>
672	Building Envelope Improvement	<input type="checkbox"/>
372	Combustion System Improvement	<input type="checkbox"/>
317	Composting Facility	<input type="checkbox"/>
554	Drainage Water Management	<input type="checkbox"/>

375	Dust Control from Animal Activity on Open Lot Surfaces	<input type="checkbox"/>
373	Dust Control on Unpaved Roads and Surfaces	<input type="checkbox"/>
374	Farmstead Energy Improvement	<input type="checkbox"/>
512	Forage and Biomass Planting	<input type="checkbox"/>
561	Heavy Use Area Protection	<input type="checkbox"/>
516	Livestock Pipeline	<input type="checkbox"/>
590	Nutrient Management	<input type="checkbox"/>
521A	Pond Sealing or Lining, Flexible Membrane	<input type="checkbox"/>
533	Pumping Plant	<input type="checkbox"/>
588	Roof Runoff Structure	<input type="checkbox"/>
367	Roofs and Covers	<input type="checkbox"/>
318	Short-Term Storage of Animal Waste and By-Products	<input type="checkbox"/>
570	Stormwater Runoff Control	<input type="checkbox"/>
606	Subsurface Drain	<input type="checkbox"/>
635	Vegetated Treatment Area	<input type="checkbox"/>
601	Vegetative Barrier	<input type="checkbox"/>
360	Waste Facility Closure	<input type="checkbox"/>
632	Waste Separation Facility	<input checked="" type="checkbox"/>
313	Waste Storage Facility	<input type="checkbox"/>
634	Waste Transfer	<input type="checkbox"/>
629	Waste Treatment	<input checked="" type="checkbox"/>
359	Waste Treatment Lagoon	<input type="checkbox"/>
		<input type="checkbox"/>
		<input type="checkbox"/>
		<input type="checkbox"/>

Can you provide an estimate of the capital required for the installation of this technology?

Please include all components and designate if provided by you or others.

Capital and O/M estimates are available on a project basis.

Can you provide an estimate of the operational costs required for this technology?

Please include all costs and designate if provided by you or others.

Estimates available upon request and vary based on system design.

May want to include operating hours

Is there financing available for this system? Yes No *If so, what are the conditions for this financing?*

Is the system available for lease? Yes No *If so, please describe.*

The system is not available for lease. However, third party build, own, operate business models can be considered

What sort of warrantee or guarantee do you provide with this technology?

Do you provide any performance guarantees or strictly defects in parts and materials?

Yes, Gemidan Ecogi guarantees everything they promise concerning performance. For example, they offer guarantees to the required power production per treated ton of waste and performance guarantees for the recovery of organic material in the process.

Explain how this system is unique or transformative and how does it improve upon or go beyond other technologies that are currently available.

GEMIDAN has invented a technology with the sole purpose of treating source-separated food waste. The bio-pulp from the Ecogi can be mixed with manure in the digester to get a higher gas production.

Would you be willing to provide a location for a site visit by Newtrient? Yes No *If so, please provide location.*

Gemidan Ecogi can provide a location in Denmark

TECHNOLOGY REFERENCES

Please provide customers with whom we can discuss this technology and its performance.

Include a company name, location, contact name and contact information.

Reference 1

Company Name: AffaldPlus I/S
Company Location: Ved Fjorden 20, 4700 Næstved, Denmark
Contact Name: Ole J. Andersen
Contact Information: +45 5575 0814 or oja@affaldplus.dk

Reference 2

Company Name: Gemidan A/S
Company Location: Holsted, Frederikshavn and Olstykke
Contact Name: Rune Nyhuus
Contact Information: +45 4019 1335 or rune@gemidan.dk

Reference 3

Company Name:
Company Location:
Contact Name:
Contact Information:

Reference 4

Company Name:
Company Location:
Contact Name:

Contact Information:

Are there any other facts about this technology that you feel should be included in this document?
