



TECHNOLOGY PROVIDER
TECHNOLOGY INFORMATION
REQUEST

Technology/Service: Anaerobic Digestion Services

Information by:

Date: 10/4/2016

COMPANY INFORMATION

Company Name: CH Four Biogas, LLC

Phone: 800-823-6844

Web Site: <http://www.chfourbiogas.com/>

Address: 37 Walnut St, Suite 300

State: MA

City: Wellesley Hills

Zip Code: 02481

TECHNICAL CONTACT

Name: Benjamin Strehler

Phone: 800-823-6844 x104

Email: bstrehler@chfourbiogas.com

Address: 37 Walnut St, Suite 300

City: Wellesley Hills

State: MA

Zip Code: 02481

DEMONSTRATION SITE CONTACT

Site Name: Barway Biogas

Contact: Ethan Werner

Title: Director

Phone: 800-823-6844 x102

Email: ewerner@chfourbiogas.com

Address: 37 Walnut St, Suite 300

City: Wellesley Hills

State: MA

Zip Code: 02481

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?

Anaerobic Digestion Services at all levels. From feasibility through installation and operations. System design. +

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

We have several systems with Phosphate removal and sequestration. We have data available on our technology and the products produced.

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

	Number of Sites	Size of Installations
Dairy	23	80-1800 milking cows
Pork	0	
Poultry	2	30,000-180,000 broilers

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

No

Location of farm(s)?

New York, Massachusetts, Maine, Ontario, British Columbia, Nova Scotia, New Brunswick, Jamaica, Chile

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

80 milking cows + food waste is the smallest. 1800 milking cows and waste is the largest. 2850 cows with waste in development in Connecticut

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

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

From manure only with 400 milking cows, up to 80% food waste with 1,800 cows. Digesters range from 250,000 gallons up to 1,000,000 gallons. Will provide Mass Balance

Input material description/characteristics:

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

Raw manure, off farm wastes, biosolids, leachate from compost, etc.

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

Full in most cases

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

We have systems from 10 years up to just commissioned

Any weather constraints? Yes No *Please describe.*

Any bedding constraints? Yes No *Please describe.*

Output materials description and characteristics:

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

~8-10% TS in the output. Separated in most cases into fiber bedding and liquid effluent. Effluent usually land applied as is, but in recent systems that effluent is treated to remove phosphates to allow for better nutrient management and value added products.

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. Farm to farm sales

Is this process scalable and to what extent (top and bottom limits)? *Please describe.*

Yes

Do you have a known scaling factor? *Please describe.*

No

Does this technology require any air input? Yes No

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

None

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

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.*

None

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

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

As part of the integrated site. Uses 20-30kW

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

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

A few 1-3hp pumps

Does this technology require any special plumbing? Yes No *Please describe what is required.*

Yes, proprietary

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

Yes, gravel pad on geotextile

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.*

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

Assembled/constructed 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 *Please describe.*

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

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?

Full spares and service

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

Full automation and remote management

What is the usable life of the system?

20 years

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

Scrap

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

Full training provided

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.

Full opex scope with all systems installed

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.

Yes, proprietary

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

CODE	NRCS DESCRIPTION	APPLIES
472	Access Control	
560	Access Road	
309	Agrichemical Handling	
371	Air Filtration and Scrubbing	
591	Amendments for the Treatment of Agricultural Waste	
366	Anaerobic Digester	✓
672	Building Envelope Improvement	
372	Combustion System Improvement	
317	Composting Facility	✓
554	Drainage Water Management	✓
375	Dust Control from Animal Activity on Open Lot Surfaces	
373	Dust Control on Unpaved Roads and Surfaces	
374	Farmstead Energy Improvement	✓
512	Forage and Biomass Planting	
561	Heavy Use Area Protection	
516	Livestock Pipeline	
590	Nutrient Management	✓
521A	Pond Sealing or Lining, Flexible Membrane	
533	Pumping Plant	
558	Roof Runoff Structure	
367	Roofs and Covers	
318	Short-Term Storage of Animal Waste and By-Products	✓
570	Stormwater Runoff Control	
606	Subsurface Drain	
635	Vegetated Treatment Area	
601	Vegetative Barrier	
360	Waste Facility Closure	
632	Waste Separation Facility	✓
313	Waste Storage Facility	✓
634	Waste Transfer	
629	Waste Treatment	✓
359	Waste Treatment Lagoon	✓

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.

\$250,000 for up to 16,000 gallons per day. Modular past that

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.

\$120,000 for up to 16,000 gallons per day

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

Yes as part of a CH Four installation

Is the system available for lease? Yes No *Please describe.*

Potentially, client dependent

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?

3 year process warranty and performance guarantee if contracted for operations and support

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

Smaller footprint, less time consuming, more applicable for farm and WWTP installations than currently available technology.

WE PROVIDE THE FULL PACKAGE. 100% PERFORMANCE AT START UP WITH PRICING GUARANTEE AND NORTH AMERICAN SUPPLY CHAIN

Would you be willing to provide a location for a site visit by Newtrient? Yes No

If so, please provide location.

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:	Seabreeze Agri-Energy
Company Location:	Vancouver, BC
Contact Name:	Jerry Keuelen
Contact Information:	604-818-4378

Reference 2

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

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?

Response not given