



Date: 10-25-2016

**COMPANY INFORMATION**

<b>Company Name:</b> McLanahan Corporation	
<b>Phone:</b> 814-695-9807	<b>Web Site:</b> www.Mclanahan.com
<b>Address:</b> 200 Wall Street	<b>City:</b> Hollidaysburg
<b>State:</b> PA	<b>Zip Code:</b> 16648

**BUSINESS CONTACT**

**TECHNICAL CONTACT**

<b>Name:</b>		<b>Name:</b>	Jim Wallace
<b>Phone:</b>		<b>Phone:</b>	517-614-2007
<b>Email:</b>		<b>Email:</b>	jwallace@mclanahan.com
<b>Address:</b>		<b>Address:</b>	200 Wall St.
<b>City:</b>		<b>City:</b>	Hollidaysburg
<b>State:</b>		<b>State:</b>	PA
<b>Zip Code:</b>		<b>Zip Code:</b>	16648

**BUSINESS HISTORY**

How long have you been in business? Since 1862

Are you part of a larger company?  Yes  No

Did you exist as another company before this company was formed?  Yes  No

*If so, what was that company's name?*

Number of employees?

What is your business structure? Corporation

What types of insurance and or surety do you provide?

**References. Please provide customers or colleagues with whom we can discuss your business and performance.**

*Please include a separate list with company name, location, contact name and contact information.*

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**Describe your business service(s).** *For example: consulting, development, engineering, equipment sales, finance, other.*

Consulting, engineering, design, equipment design and manufacturing

**Area or region of operation.**

Global

**Does your company hold any patents or the rights to any patents?** *Please identify.*

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**Do you manufacture equipment?**  Yes  No *Please describe.*

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**Do you integrate equipment manufactured by others?**  Yes  No

*If you integrate, please list the names of the companies you represent.*

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How do you answer potential customer's question about financial strength of your company?

Do you offer technical/service support?  Yes  No *If so, what methods?*

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Do you offer design services?  Yes  No *Please describe.*

Do you offer financing?  Yes  No *If so, what terms?*

Are you a full stop shop? *Design to construction to operate?*  Yes  No *Please describe.*

Do you have preferred partners?  Yes  No

*If so, please list and provide contact information/identify partners by name.*

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**Do you have any third-party verification/research that has been done on this technology?**  Yes  No

*If so, please describe.*

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**Do you provide a performance guarantee?**  Yes  No

*If so, what are you guaranteeing? For example: up time, methane production, biogas production, parasitic load, throughput, O&M cost, percent recovery, other.*

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**Are there any other aspects of your business that you feel should be included in this document?**

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**INITIAL TECHNOLOGY OVERVIEW**

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**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.**

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**What is the name of the technology or service?**

Air stripping and absorption

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**What unit process is the technology used in?**

*For example: initial collection/transfer manure storage, energy recovery, primary/coarse solids recovery, advanced suspended/fine solids recovery, drying, struvite production, nitrification denitrification, ammonia stripping, algae, vermi composting, membrane filtration, evaporation, other.*

Ammonia Stripping

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

We do not have a full-scale system in the field yet.  
We completed 2 year demonstration trial at Car-Min-Vu Farms in Webberville, MI in October 2015.

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**Size of farm(s)?**

**Location of farm(s)?**

**What's the smallest/largest farm for your system?**

Air stripping is readily scaled up or down. The farm size is dictated by the need for ammonia removal.

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**Input material description/characteristics:**

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

McLanahan's air stripping/absorption process uses high efficiency random packing. As such, the influent must be devoid of suspended solids in order to avoid system fouling. Ultrafiltration is the preferred pre-treatment prior to air stripping/absorption.

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

Either

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

Mature

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**Any weather constraints?**  Yes  No *Please describe.*

Cannot process frozen manure without thermal heat

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**Any bedding constraints?**  Yes  No *Please describe.*

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**Is this process scalable and to what extent (top and bottom limits)?**  Yes  No *Please describe.*

Air stripping is readily scaled up or down. The farm size is dictated by the need for ammonia removal.

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**Do you have a known scaling factor?**  Yes  No *Please describe.*

Input and output of your unit/system – do you have a mass balance analysis?  Yes  No *Please describe.*

Do you consider this technology part of a larger system that you provide?  Yes  No *Please describe.*

Yes, air the stripping/absorption process requires the removal of fine solids in advance.

Has your technology been accepted by the NRCS?  Yes  No *Please describe.*

Would you be willing to provide information for a technical review?  Yes  No

Would you be willing to respond to a Request for Quotation (RFQ) on a generic project for comparison of your technology against other technologies in the same unit process?  Yes  No

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

Air stripping of ammonia makes sense when used following anaerobic digestion due to the increase in ammonia concentration (resulting from conversion of organic nitrogen to ammonia nitrogen) and the availability of waste heat from an engine generator to push the equilibrium in favor of ammonia. The equilibrium moves in the ammonia gas direction with increasing temperature and increasing pH. Rather than modify the pH, which is an expensive proposition (particularly with digested manure due to its buffering capacity), our process utilizes waste heat from the engine generator to increase the temperature of the UF permeate to approximately 160°F prior to air stripping