



Technology/Service:	Hydrocyclone Separator
Information by:	Rob Plank
Date:	February 16, 2018

COMPANY INFORMATION

Company:	McLanahan Corporation		
Phone:	(814) 695-9807	Web Site:	www.mclanahan.com
Address:	200 Wall Street	City:	Hollidaysburg
State:	PA	Zip Code:	16648

TECHNICAL CONTACT

Name:	Rob Plank
Phone:	(814) 695-9807
Email:	rplank@mclanahan.com
Address:	200 Wall Street
City:	Hollidaysburg
State:	PA
Zip Code:	16648

DEMONSTRATION SITE CONTACT

Site Name:	
Contact:	
Title:	
Phone:	
Email:	
Address:	
City:	
State:	
Zip Code:	

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?

Hydrocyclones Separators

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

Sand bedding provides a healthy environment for cows, keeping them cleaner, thereby aiding in maximizing overall cow comfort and ultimately enhancing dairy profitability. When sand is mixed with manure, the manure stream becomes abrasive, difficult to agitate and pump, and expensive to land apply. McLanahan Hydrocyclone Separation Systems utilize proven sand-processing technology to separate sand from manure. Separating the two produces clean recycled sand that is suitable for reuse within days. The resulting manure effluent containing water, manure fibers, and all the manure nutrients can be further processed through a Liquid-Solid Separation System.

McLanahan Corporation Sand-Manure Separation Systems are also designed to achieve sufficient sand recovery to enable manure waste to be processed through anaerobic digesters, as well as other treatment systems requiring high sand recovery.

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

SYSTEMS	NUMBER OF SITES	SIZE OF INSTALLATIONS
Dairy	250	Herd sizes from 200 to 15,000
Pork		
Poultry		

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

Dairies with 200 to 15,000 cows

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

This equipment has a record of reliable performance on multiple dairies

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

Globally. Systems are successfully operating around the world.

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.

The input is diluted sand-laden manure. The output is two separate recyclable products – clean, dryer sand that could be re-used for cow bedding, as well as sand-free manure effluent that is easy-to-manage and can be used on fields. A mass balance analysis is available.

Input material description and characteristics:

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

Diluted sand laden manure

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

This technology treats the full manure stream

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

This is a mature technology, operating successfully on multiple dairy farms since 2004

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

System must be kept above freezing

Any bedding constraints? Yes No *If so, please describe.*

This processing equipment is used on farms that bed with sand.

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.

The output is two separate recyclable products – clean, dryer sand that could be re-used for cow bedding, as well as sand-free manure effluent that is easy-to-manage and can be used on fields or sent to a digester.

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?

The sand-free manure is easy-to-manage and can be used as crop nutrients on fields

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

This system can be sized for 200 cows to no upper limit because the system is modular.

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

Sizing and scaling factors are not a matter of technology but of economics.

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.*

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.*

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

The Hydrocyclone has no electrical requirements but it must have material pumped to it so the system has electric requirements

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 dairy electrical service

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.*

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

Plumbing for the liquid overflow is done with standard size PVC

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

A support structure is normally provided

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

The Hydrocyclone can be used as an independent piece for sand separation or it can be added to an SMS system as a way to remove additional fine sands. This is especially important when designing a sand removal system pre-digestion.

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.*

The system needs 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.*

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

If so, please describe if necessary.

NRCS is familiar with this technology but it is not included into a standard practice.

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?

Spare parts are industry standard and available

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

McLanahan typically supplies a control panel which contains the operational logic for the system.

What is the usable life of the system?

Really depends on the installation but up to 15 years.

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

Metal scrap 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. Outsourced O/M contractors are available

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. Daily walk through inspections and periodic response to system upsets are required.

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.

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

CODE	NRCS DESCRIPTION	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 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.

Depends on the type and size of system and location.

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.

Depends on type of system and can be supplied at time of quote.

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.*

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?

1 year warranty for all components except wear items. Yes, a guarantee can be provided.

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

Rubber lined components provide for long service life

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

There are many locations around the world which are available.

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.

Case Studies are available on-line for the following dairies:

<https://www.mclanahan.com/products/sand-manure-separators-sms/>

Reference 1

Company Name:	Car-Min-Vu Dairy
Company Location:	Webberville, MI
Contact Name:	Chad Minnis
Contact Information:	Upon request

Reference 2

Company Name:	SwissLane Dairy
Company Location:	Alto, MI
Contact Name:	Fredrick Oesch
Contact Information:	Upon request

Reference 3

Company Name:	Cornell University
Company Location:	Ithaca, NY
Contact Name:	Paul Jenette
Contact Information:	(607) 253 - 4227

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?

McLanahan's equipment offering with regards to sand separation technology is supported by some of the most knowledgeable persons in the industry