



Technology/Service:	Bio-Solar Purification	Date:	04/26/2017
Information by:	Helio Pur Technologies		

COMPANY INFORMATION

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State:	France	Zip Code:	84120

TECHNICAL CONTACT

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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?

Bio-Solar Purification

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

Wastewater treatment technology based on photosynthesis intensification. Able to treat water for reuse and to recover C, N, P, S nutrients in a valuable photosynthetic biomass and oxygen. Key innovative technology to integrate with pre-treatment and optional post-treatment to recover water and nutrients without environmental impact from livestock operation.

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

SYSTEMS	NUMBER OF SITES	SIZE OF INSTALLATIONS
Dairy	1	20 m3/day
Pork	0	
Poultry	0	

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

West, Southwest, Southern US states

Location of farm(s)?

Currently, Saudi Arabia

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

Al Safi Dairy Farm Saudi Arabia

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.

Input: Brackish water (TDS: 6,800 mg/L) COD: 3,300 mg/L, Total N: 285 mg/L, N-NH4:145mg/L, P: 23 mg/L output: brackish water: COD: 217 mg/L, Total N: 131 mg/L, N-NH4:17 mg/L, P: 0 mg/L

Input material description and characteristics:

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

Flushing water from milking parlor for reuse and biomass recovery as fertilizer. Can be used also wastewater from digester or other pre-treatment.

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

Fraction of manure contained in wastewaters from flushing.

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

Mature, but small adjustments may be needed

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

Sunny areas are optimal for all-year operations

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.

Water for flushing or crops irrigation containing microalgae biomass (50% proteins, 30% polysaccharides, 20% oils with polyunsaturated fatty acids), oxygen enriched air.

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?

Microalgae biomass can be used as organic fertilizer, animal feeding or biogas production. Oxygen enriched air can be used for pond aeration or aerobic pre-treatment.

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

Footprint is the upper limit. Bottom: a small unit is possible, but less efficient (<2500 gal/day)

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

Does this technology require any air input? Yes No

Air enriched in carbon dioxide is necessary. Input is made through a low energy vacuum system.

What is the preferred air connection? For example: psi, fitting size, air quality.

If not distributed by the system, please list each connected device.

The outside air without treatment is aspirated. The CO2 is added from a pretreatment tank or an untreated flue gas.

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.

For the vacuum pump and automation of vacuum system and regulation of CO2 enrichment of air.

What is the preferred electrical connection? For example: phase #, voltage, full load amps.

If not distributed by the system, please list each connected device.

3 phases, 380 V, 32 A

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.

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

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

Bio-Solar Purification must be integrated with pre-treatment according type of wastewater and eventually with a post-treatment if it is necessary to separate the biomass.

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 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.

Small units can be removable or mobile

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?

Flexible plastic tubes (tubular systems) and gas injector.

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

CO2 injection can be controlled remotely, affecting the productivity of the system

What is the usable life of the system?

10 to 20 years

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

Depends on the type of contract

What is the educational and technical level of competence for the operation of 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.

Depends the model. Tubular systems need tubes cleaning once a week, vacuum pump revision and gas injector cleaning every year. Tank systems only need vacuum pump revision and gas injector cleaning once a year.

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"/>
22132	Sewage Treatment Facilities	<input checked="" 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.

Turnkey contracts depending on the size: 20 m3/day 200,000 \$, 200 m3/day: 1,2 M\$, 2,000 m3/day: 6 M\$. Long term operation and maintenance services contracts available without capital investment

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.

Less than 0.1 \$ per m3 treated

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.*

Operation and maintenance contract including system lease and monthly payment..

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?

For turnkey contract only defects in parts and material after complete users training. For full service contract, quantitative and qualitative performance guarantees.

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

Low energy expenditures to treat and reuse dairy and livestock wastewater on-site, while preventing GHG emissions and recovering nutrients without environmental impact on atmosphere and underground waters.

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

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:	
Company Location:	
Contact Name:	
Contact Information:	

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?