

The Remediator

Dairy Lagoon Remediation Treatment System

Customized Water Systems
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CWS has put together a Dairy Lagoon treatment system designed to use Biological Remediation to reduce waste from milking operations. The program uses several technologies to increase the levels of Dissolved Oxygen(DO) in the lagoon so the biological activity will turn from anaerobic to aerobic. This requires DO levels to be above 35% saturation. Normal levels of DO are in the 2 to 5% saturation range causing the lagoon to digest in an anaerobic state. This state excites the development of methane gas and feeds off of the levels of nitrates and phosphates.

The CWS System changes for biological digestion from anaerobic to aerobic, thus eliminating the development of methane gas and naturally remediates the levels of nitrates. The purpose of the system is to bring the discharge water to levels acceptable to EPA regulations and eliminates the need for draining the lagoon to remove manure levels.

CWS in cooperation with EMOH Company, LLC has developed a patent-pending technology combining Electrons, Magnetics, Oxygen & Hydrogen (EMOH) whereby scrubbing of water molecules breaks down water clusters into individual water molecules or smaller clusters creating substantial increase of dissolved oxygen, producing free oxygen and hydrogen, reduction in scaling and deposit build-up in water-based systems. The breaking down of the water clusters allows the systems to increase significantly the levels of Dissolved Oxygen (DO) in the water column. Through this mechanism, the water body (Lagoon) can be shifted from anaerobic digestion to aerobic digestion. This aerobic system has been successfully used to eliminate sludge layers in water retention ponds and manure waste treatment lagoons. The program has been deployed in Florida, California and Arizona over the past three years.

EMOH & Bio-Remediation –

EMOH



Bio-Remediation

Combined with Bio-Remediation, select facultative heterotrophic bacteria, augmented into water column, have specific talents to generate enzymes, lignin, lipid and cellulose degraders responsible for accelerated reduction of TSS (suspended solids) and FOG(fats, oils and grease) ingestion carbon, nitrogen, phosphorous at 100:10:4 ratio.

Ortho-phosphate, primary nutrient, is reduced by the conversion to ATP within these microbes with alkalinity greater than 1500 mg/l and pH of greater than 7.2 the deceased microbes will form an insoluble appetitic phosphate which will precipitate out of water column and cease to be bio-available.

Augmented facultative heterotrophic bacteria settling into benthic regions will speed up sludge digestion and reduce odors by using an alternate electron acceptor other than oxygen.

Organic and inorganic substances released into the environment as a result of domestic, agricultural and industrial activities leads to organic and inorganic pollution.

Primary and secondary treatment processes eliminate easily settled materials and oxidize organic material present in wastewater. The final clear, clean effluent is then discharged into natural water bodies, aquifers, reservoirs and bays/streams with secondary effluent loaded with inorganic nitrogen and phosphorus which cause eutrophication and long-term problems because of refractory organics and discharge of heavy metals.

Custom microalgae cultures coupled with EMOH hyper-oxygenation in presence of hydrogen ions offers complete solution and provides a tertiary bio-treatment which creates self-consuming flocculating biomass generating nothing but free CO₂

Frequency Generator

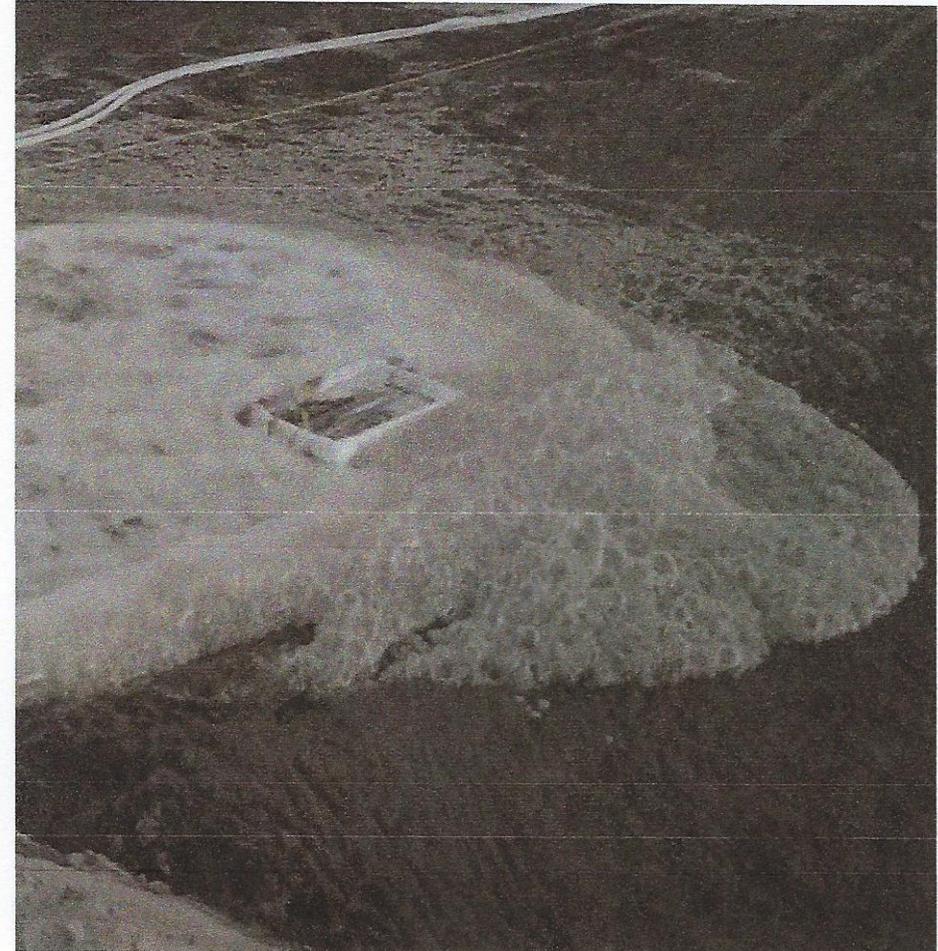
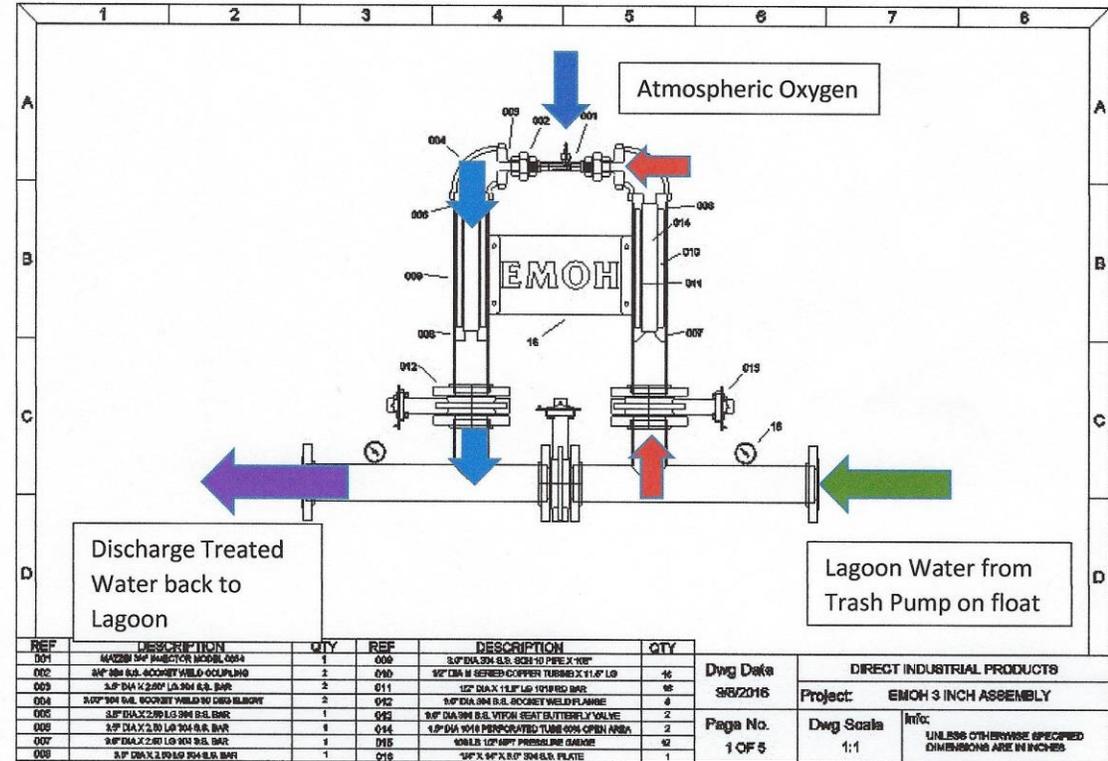


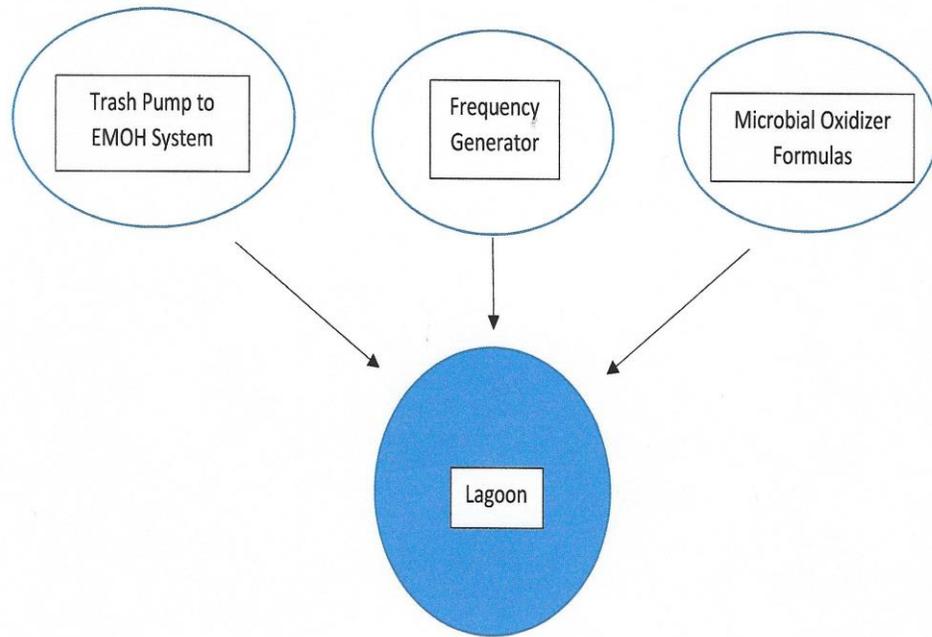
Diagram of how the EMOH system works:

CWS owns distribution rights to patented technology based on sound laws of physics. Scale forming minerals found in water are electrically charged altering polarity to remain in solution, allowing water to be in a perfect format, creating a balance of negative and positive charges for ideal performance in water applications that incorporates an electrostatic voltage spike signal generator, multiple radio frequency signal generators, multiple antennas and signal boosters.

Typically, incorporated as an integrated solution, with other technologies, to address remediation in various industry applications.



Basic Water Treatment System Diagram:



The primary mover in the system is the EMOH system. This device moves lagoon water at 1,200 GPM and encourages movement of the water throughout the lagoon. The water also passes over the frequency generator which adds additional breaking of the solids and increases the retention of the DO in the water. This activity then combines with the added microbial mixture which also contains oxidizer elements to accelerate the aerobic digestion process.

Consulting Remediation Practitioners:

Fredrick Bloetscher, PhD, Assistant Professor, Florida Atlantic University, Dept. of Water Engineering

Steve Harris, H&S Consulting, Phoenix, AZ

Del and Jason Bentz, CBX Technologies, Mesa, AZ

Data Points of Dissolved Oxygen tests at Dairy No. 1, Turlock, CA

Created	Baro (mbar)	Temp (C)	RDO (mg/L)	RDO Sat (%)	pH(pH)	Orp (mV)
2/15/2017						
14:32	1014.1	16.24	1.12	11.6	7.31	-99.6
2/21/2017						
15:28	1019.3	15.09	2.77	27.7	7.46	-67.4
2/23/2017						
9:51	1020.4	14.07	2.41	23.5	7.33	-60.9
2/27/2017						
14:36	1009.7	17.65	2.22	23.8	7.25	-74.7
3/1/2017						
11:50	1026.4	17	3.63	37.8	7.14	-95.7
3/6/2017						
15:30	1022	15.73	5.33	54	7.32	-95
3/25/17						
11:04	1018.3	17.88	2.77	29.4	7.09	-80.9

The above data sets were taken by CWS personnel using an In-situ Aquatroll 600 device. As can be shown by the highlighted data set of RDO and RDO Saturation the DO levels of the pond continued to increase to a level of 54% saturation. The pond was then opened to new water coming in, which lowered the percent of saturation. CWS will continue to monitor the DO levels to assure that the trend continues to show an increase in DO levels.

Data Sets for Proof of Aerobic Digestion

CWS is working with several laboratories in the San Joaquin Valley to gather data showing the state of shift in the lagoons from Anaerobic to Aerobic Digestion. So far, the tests are just beginning and there have been some false starts with the data collection and processing. CWS is continuing to refine this process to obtain accurate microbial platelet counts showing the change in microbial activity.

Scalar Energy

The properties of Scalar Energy includes non-linear and non-Hertzian. This energy form has the capacity to carry information. It also does not decay with the passing of time or distance. Scalar Energy cannot be measured by contemporary frequency instruments as it is depicted to be without frequency. This energy form is static, a stationary form of energy. When two similar frequencies coming from opposite directions meet, they cancel each other out. This results in a stationary energy form. The traditional understanding of energy is that it flows out in the form of waves. However, Scalar Energy does not radiate as waves but expands outward in circles of energy. Occupying space, this spatial mass is not a vacuum but comprises a field of energy systems that is alive. This vibrant and dynamic energy field radiates a network of harmoniously balanced energies. Scalar energy can be created naturally. It is always existent in the universe. By applying the conditions required, Scalar Energy can be created artificially.

Examples of positive affects of Scalar Energy on dairy lagoons: A Scalar wave will not cross over another Scalar wave. This means minerals won't bind. Hydrogen won't bind with nitrogen, so ammonia is not formed. Reducing surface tension in the water makes all aspects for remediation easier. Bacteria has more energy to consume digest and replicate.

Water Conditioner

Treated Water for Plant Health

The Scalar Energy unit is a patented electronic device which can negatively or positively charge the ions in water. As a result of updates by Complete Water Systems, free electron emission is efficient and abundant. As a result, the minerals and other key components to a plant's health remain in solution. This reduces the extra energy that would ordinarily be required for basic nutrient acquisition to such an extent the plant can then have the necessary energy it needs to produce hormones in their proper metabolism. Simply put, the plant will have additional energy to produce growth and reproduction in greater amounts that it would have ordinarily with out the Scalar Energy.

This process also allows the free electrons to capture salts in the water and render those salts less likely to cause salt burn which is typical with water with heavy salt. This makes it possible to use water, that would ordinarily contain too high a salt content, even those that may be extra salt sensitive. The free electrons are able to take the salts to the subsoil well below the root structure and return them to the natural water table. As a result plants are able to grow with fewer, if any, problems relating to excessive salt in the water. The local situation will determine how high the salt content can go and the unit still be effective.

Soils treated with Scalar Energy water have shown increased colloidal properties. The need for fertilizer can be significantly reduced and since the plant materials are utilizing the water more efficiently, the need to water can be less frequent. Negatively charged water appears to result in smaller insect populations as well. As a result of all these impacts of the Scalar Energy unit the grower saves in both chemicals and labor, and realizes an additional profit as a result of healthier and better plants. In addition, the Scalar Energy unit is environmentally friendly.

Longer life expectancy on all valves, pipes, spray heads, spray equipment, as well as, a host of other items can be realized using this unit which is easily installed on existing water lines. An added bonus, which may not be realized immediately, but will be noticed is that the standard maintenance procedures on equipment will be cut down and in some cases eliminated. This can add up to a tremendous savings in not only eliminating the down-time, but also the cost of the labor and the equipment cost.



Pond on right is settling pond
Pond on left is flush pond
Starting point of settling pond, 90% solids

Settling pond at start
90% Solids



Settling pond currently
very active



Units on Pond

Simple with low maintenance

Low cost of operation



Cleaner lanes
Better hoof health
Less slippage
Eliminates algae slime



Just after irrigation

All solids under water line
are gone, sand remaining

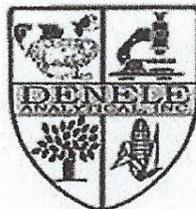




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Analysis Report on previous test lagoon

	3/10/2016	8/20/2016	Difference	
PH	7.78	7.52	3%	↓
EC	14.6	5.27	64%	↓
SOLUBLE SALTS	9344	3373	64%	↓
CALCIUM	406	116	71%	↓
MAGNESIUM	192	84.6	56%	↓
SODIUM	535	170	68%	↓
POTASSIUM	1840	592	68%	↓
BORON	1.34	0.489	64%	↓
TKN (NITROGEN)	1600	347	78%	↓
AMMONIA NITROGEN (NH4)	868	280	68%	↓
PHOSPHORUS	141	53.5	62%	↓
BOD (BIOCHEMICAL OXYGEN DEMAND)	823	222	73%	↓



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Sample Analysis Report

Customer
Customized Water Systems
P.O. Box 4369
Modesto, CA 95352

Grower
Customized Water Systems
P.O. Box 4369
Modesto, CA 95352

PURCHASE ORDER: N/A
RECEIVED DATE: 03/15/2017 10:08 am
SUBMITTED BY: Kevin
ANALYZED DATE:

Complete - Lagoon Water (COM-L)
SOURCE: Lagoon Water

Sample ID	Lab ID	Analyte	Method Ref	Result	Units	Lbs/1K Gallons
	792964A	pH (PH)	EPA 150.2	7.62	Units	N/A
		Electrical Conductivity (EC)	EPA 120.1	4.34	mmhos/cm	N/A
		Soluble Salts (SALT-SOL)		2778	ppm	N/A
		Calcium (Ca)	EPA 200.7	109	ppm	0.91
		Magnesium (Mg)	EPA 200.7	90.1	ppm	0.75
		Sodium (Na)	EPA 200.7	146	ppm	1.22
		Potassium (K)	EPA 200.7	360	ppm	3
		Boron (B)	EPA 200.7	0.270	ppm	0
		Total Kjeldahl Nitrogen (TKN)	SM 4500-NH3 C	347	ppm	2.89
		Ammonium Nitrogen (NH4)	SM 4500-NH3 C	193	mg/L	1.61
		Phosphorus (P)	SM 4500P-E	43.5	ppm	0.36

Initial test results at start of trial



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Modesto, CA 95352

PURCHASE ORDER: [REDACTED]
RECEIVED DATE: 02/09/2017 11:23 am
SUBMITTED BY: Kevin
ANALYZED DATE:

BOD (BOD)
SOURCE: Lagoon Water

Sample ID	Lab ID	Analyte	Method Ref	Result	Units
[REDACTED]	792570A	Biochemical Oxygen Demand (BOD 5)	SM 5210B	1,846	mg/l.

Initial test results at start of trial

Recent testing
showing aerobic
plate counts
increasing



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PURCHASE ORDER: N/A
RECEIVED DATE: 03/20/2017 3:08 pm
SUBMITTED BY: Joey
ANALYZED DATE:

Aerobic Plate Count/ml (AR-PC/ml)
SOURCE: Lagoon Water

Sample ID	Lab ID	Analyte	Method Ref	Result	Units
	793081B	Aerobic Plate Count (AR-PC)		288,000	MPN/100ml



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PURCHASE ORDER: N/A
RECEIVED DATE: 03/28/2017 2:29 pm
SUBMITTED BY: Kevin
ANALYZED DATE:

Aerobic Plate Count/ml (AR-PC/ml)
SOURCE: Lagoon Water

Sample ID	Lab ID	Analyte	Method Ref	Result	Units
	793204A	Aerobic Plate Count (AR-PC)		>73800	MPN/100ml



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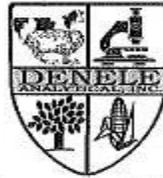
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PURCHASE ORDER: N/A
RECEIVED DATE: 03/20/2017 3:08 pm
SUBMITTED BY: Joey
ANALYZED DATE:

Anaerobic Plate Count (AN-PC)
SOURCE: Lagoon Water

Sample ID	Lab ID	Analyte	Method Ref	Result	Units
	793081B	Anaerobic Plate Count (AN-PC)		738,000	MPN/100ml



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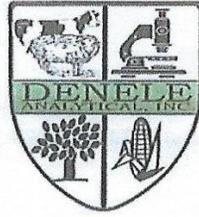
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PURCHASE ORDER: N/A
RECEIVED DATE: 03/28/2017 2:29 pm
SUBMITTED BY: Kevin
ANALYZED DATE:

Anaerobic Plate Count (AN-PC)
SOURCE: Lagoon Water

Sample ID	Lab ID	Analyte	Method Ref	Result	Units
	793204A	Anaerobic Plate Count (AN-PC)		26,000	MPN/100ml

Recent testing showing anaerobic plate counts decreasing



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Modesto, CA 95352

Grower

PCA:

PURCHASE ORDER:
RECEIVED DATE: 8/8/17 3:47 PM
SUBMITTED BY: Kevin
ANALYZED DATE: 8/9/17

Complete Lagoon Water (COM-L)
SOURCE: Lagoon Water

Sample ID	Lab ID	Analyte	Method Ref	Result	Units	Lbs/1000 Gal as Rec'd
	T7220021A	pH (pH)	SM4500-H+ B	7.4	Units	N/A
		Ammonia Nitrogen (NH3-N)	SM 4500 NH3-C	129	mg/L	10.7
		Soluble Salts (SALT-SOL)	Calculation	2240	mg/L	187
		Magnesium (Mg)	EPA 200.7	75.2	mg/L	6.27
		Calcium (Ca)	EPA 200.7	117	mg/L	9.76
		Boron (B)	EPA 200.7	0.349	mg/L	0.029
		Sodium (Na)	EPA 200.7	116	mg/L	9.67
		Potassium (K)	EPA 200.7	299	mg/L	24.9
		Total Kjeldahl Nitrogen (TKN)	SM 4500-NH3-C	185	mg/L	15.4
		Total Phosphorus (TP)	SM 4500P-E	38.6	mg/L	3.22
		Electrical Conductivity (EC)	EPA 120.1	3.50	mmhos/cm	N/A

Maintaining positive levels during heavy remediation



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PURCHASE ORDER: N/A
RECEIVED DATE: 03/15/2017 10:08 am
SUBMITTED BY: Kevin
ANALYZED DATE:

BOD (BOD)
SOURCE: Lagoon Water

Sample ID	Lab ID	Analyte	Method Ref	Result	Units
	792964A	Biochemical Oxygen Demand (BOD 5)	SM 5210B	617	mg/L

Test showing positive results during heavy remediation