DAIRY PRODUCTS & TWC

MEC

OVERVIEW AND THE MILK INDUSTRY

Australian technology that can be easily understood as a block of water insoluble compounds, extremely efficient for the development of probiotic bacteria.

Technology has revolutionized the way of water treatment in ETA's and ETE's all over the world.

Numerous cases of success including in Brazil and New Zealand, show the efficiency and the cost reduction in effluent treatments in the milk industry wilst making the reuse water more productive and less destructive to the environment.

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The dairy industry, which processes about 35 billion liters a year, generates around 84 billion liters of effluent. Sanitary authorities are increasingly demanding on this issue, as the organic load on dairy effluent is one of the largest in the industry. In Brazil, the largest industrialized milk producers are Minas Gerais, Rio Grande do Sul, Paraná and Santa Catarina. In these states 80% of the water consumed is in the cleaning process, and in these cases, because TWC is a sustainable product, one can take advantage of this cheap and efficient technology.

TWC technology has been developed as a natural source of organic carbon for bacillus bacteria that are present in the environment. After introduction, these bacteria start to multiply exponentially, lowering nitrogenous, sulfated and phosphate compounds and turning them from unavailable to available forms. This greatly increases the efficiency of the Effluent Treatment Plants in Dairy and provides a more productive waste product incressing crop and paddock yeald.

This technology will provide the development of selective natural bacteria groups and acts directly on the concentrations of sludge and greatly increasing the efficiency of the treatment without the use of chemicals which greatly helps the sustainability of the process .

Like all microbial processes, TWC technology requires approximately 3 to 4 weeks to reach its combat potential and to develop a sufficient population of bacteria to maintain the system, the technology is then active for 3 to 6 months depending on the conditions of each location, making this technology one of the best costs x benefits for this purpose.

Our focus:
- Increased productivity;
- Increase crop and paddock yeald,
- Consequent improvement of your business;
- Reduction of foams generated in the process;

Brazil - March 2017 - Antes

Brazil - May / 2017 – After 5 weeks

Case in Brazil:

"The results with the technology were fantastic and the reduction of the foam in the main tank was very good" - Geraldo Magela - Owner Ourolac / GO

Below are the results of the analyzes in a customer of Bubalinos (Búfalas) - "We are very happy with the results and without harming the nature, even our pastures have improved with the water of reuse" - Veridiana Almeida Prado

Summary Report Almeoda Prado

Date	Collect	BOD (mg/L)	Efficiency %	Suspended Solids	Efficiency %	Oils and Grease	Efficiency %	Phosphate	Efficiency %	Nitrate	Efficiency %
2/06/2017	Input	32915		24860		52420		2.74			
	Exit	2444	92.57%	160	99.36%	132	99.75%	0.65	76.28%		
26/06/2017	Input	5743		3338		3760		5.28		6.28	
	Exit	138.62	97.59%	36	98.92%	41	98.91%	2.53	52.08%	4.07	35.19%
25/07/2017	Input	27673.5		30235		59060		33.21		16.39	
	Exit	2833.4	89.76%	52	99.83%	125	99.79%	27.14	18.28%	3.08	81.21%
28/08/2017	Input	16400		2945		144		73		0.56	
	Exit	3480	78.78%	443	84.96%	19	86.81%	58	20.55%	0.45	19.64%
25/09/2017	Input	15500		17080		32473		860		67.7	
	Exit	1778	88.53%	85	99.50%	511	98.43%	430	50.00%	26.2	61.30%
20/11/2017	Input	77800		48100		2662		17.9		388.3	
	Exit	555.5	99.29%	275	99.43%	298	88.81%	4	77.65%	19.4	95.00%
10/01/2018	Input	31548		59196		66558		6.8		22.01	
	Exit	1996.9	93.67%	546	99.08%	974	98.54%	4.7	30.88%	13.54	38.48%
21/03/2018	Input	43592		49770		34464		149.5		72.2	
	Exit	2366.8	94.57%	450	99.10%	270	99.22%	15.2	89.83%	20.8	71.19%
17/05/2018	Input	10840		22890		18290		22.4		42.9	
	Exit	510.4	95.29%	520	97.73%	517	97.17%	6.7	70.09%	10.8	74.83%

Case in New Zealand:

Dairy Farm Effluent Ponds NZ

As stated by the National Institute of Water and Atmospheric Research (NZ) one of the two key contaminants to lakes and river systems is dissolved reactive phosphorus. The tests undertaken by Marine Easy Clean have clearly shown that through the use of ***TWC***, a 66% reduction of dissolved reactive phosphorus been achieved in dairy effluent ponds. The water from these ponds is then sprayed onto paddocks with a noticeable improvement in crop health. This massive reduction in dissolved reactive phosphorus and it now been made biologically available, means the crop can now absorb this rich nutrient source so the run off now has minimal phosphorus levels. This run off then ends up in lakes and rivers systems with less damage to these natural systems. This benefits the future health of all ponds and lakes adjacent to dairy effluent systems.

The test results also show that in this intense waste environment ***The Water Cleanser*** needs to be replaced every 10 to 12 weeks, with a two week overlap of product rotation to maintain constant water conditioning.

After 12 weeks we saw the following reductions:

- Total Alkalinity down 42%
- Total Hardness down 29%
- Carbonate Hardness down 48%
- Electrical Conductivity down 40%
- Dissolved Calcium down 26%
- Total Copper down 81%
- Total Iron down 88%
- Dissolved Magnesium down 28%
- Total Ammoniacal-N down 84%
- Nitrite-N down 24%
- Nitrate down 30%
- Nitrate-N 0% neutral
- Nitrate 0% Neutral

- Dissolved Reactive Phosphorus down 66%
- Phosphorus down 66%

And a increase in:

- Free Carbon Dioxide up 56%

Free carbon dioxide is a waste product from healthy microbial activity. To have it rise shows how good ***The Water Cleanser*** is at maintaining good water quality.

All testing was conducted for the Waikato Raupatu River Trust. Lab test below.

Hill Laboratories
BETTER TESTING BETTER RESULTS

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ANALYSIS REPORT

Client:	Waikato Raupatu River Trust	**Lab No:**	1290041	SPv1
Contact:	Terina Rakena	**Date Registered:**		
	C/- Waikato Raupatu River Trust	**Date Reported:**		
	Private Bag 3344	**Quote No:**	60723	
	HAMILTON 3204	**Order No:**		
		Client Reference:	Water testing	
		Submitted By:	Terina Rakena	

Sample Type: Aqueous

		Sample Name:	16 April-1 May 2014	20-28 May 2014	20-30 June 2014	22-29 July 2014	
		Lab Number:	Sample 1	Sample 2	Sample 3	Sample 4	
pH	pH Units		7.6	8.1	7.9	7.8	-
Total Alkalinity	g/m³ as $CaCO_3$		1010	560	400	530	-
Free Carbon Dioxide	g/m³ at 25°C			8.0	10.4	17.9	-
Total Hardness	g/m³ as $CaCO_3$			240	156	171	-
Carbonate Hardness	g/m³ as $CaCO_3$		1010	560	400	530	-
Electrical Conductivity (EC)	mS/m		252	178.8	125.8	152.7	-
Dissolved Calcium	g/m³			39	30	25	-
Total Copper	g/m³		0.081	0.0075	0.0077	0.0157	-
Total Iron	g/m³		19.4	2.6	2.9	2.4	-
Dissolved Magnesium	g/m³			36	19.8	26	-
Total Ammoniacal-N	g/m³		360	25	36	61	-
Nitrite-N	g/m³		0.03	0.168	0.03	0.02	-
Nitrite	g/m³		0.10	0.55	0.11	0.07	-
Nitrate-N	g/m³		0.02	0.53	0.06	0.02	-
Nitrate-N + Nitrite-N	g/m³		0.03	0.70	0.10	0.02	-
Nitrate	g/m³		0.09	2.3	0.28	0.09	-
Dissolved Reactive Phosphorus	g/m³		39	24	16.7	13.4	-
Phosphate	g/m³		120	73	51	41	-

SUMMARY OF METHODS

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.