

# PILOT SCALE WASTE STABILIZATION PONDS ASSOCIATED WITH BIOFILMS FOR ORGANIC MATTER AND NUTRIENTS REMOVAL

8<sup>th</sup> CONFERENCE ON WASTE STABILIZATION PONDS

Belo Horizonte, Brazil – April, 2009

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■ **OBJECTIVES**

Evaluate the performance of biofilms in facultative and maturation ponds for removal of:

- organic matter,
- nutrients,
- suspended solids and
- pathogens.



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## ■ Experimental Apparatus

- four experimental systems operated in parallel, fed continuously with the effluent from an anaerobic pond.
- Total HRT= 11 days.
- Dimensions of each module:
  - length = 4.56 m
  - width = 1.44 m;
  - useful height = 0.8 m
  - Surface area of each module= 6.57 m<sup>2</sup>.



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### ■ Experimental Apparatus





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■ **Results**

	PHASE 1				
	Influent	A3	B3	C3	D3
BOD <sub>5</sub>	90,5	39.8	45.0	48.0	59.7
COD	159.5	74.6	85.1	96.0	151.6
VSS	189.3	187.6	171.8	190.8	205.4
P <sub>T</sub>	0.37	0.19	0.20	0.21	0.23
TKN	29.1	9.4	10.9	11.0	10.6
NH <sub>3</sub> -N	24.5	6.4	7.4	7.7	6.1

Units mg/L



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■ Results

	PHASE 2				
	Influent	A3	B3	C3	D3
BOD <sub>5</sub>	66.4	12.8	16.9	21.5	44.1
COD	90.5	33.7	51.9	73.0	107.5
VSS	572.7	110.7	386.6	364.5	813.9
P <sub>T</sub>	0.29	0.17	0.16	0.27	0.26
TKN	11.4	2.79	3.36	3.74	5.98
NH <sub>3</sub> -N	8.05	1.22	1.09	1.24	1.35

Units mg/L

## ■ CONCLUSIONS

- The presence of biofilm attached to inert support material contributed significantly for the removal of organic matter, volatile suspended solids and nutrients.
- The investment cost related to the acquisition of the inert support material may be compensated by the overall improvement of the system, which was able to provide effluent quality similar to energy consuming technologies, such as the activated sludge process.
- The periodic removal of the biofilm proved to be very effective to improve the overall performance, mainly in terms of organic matter and volatile solids removal.