IWA International Water Association

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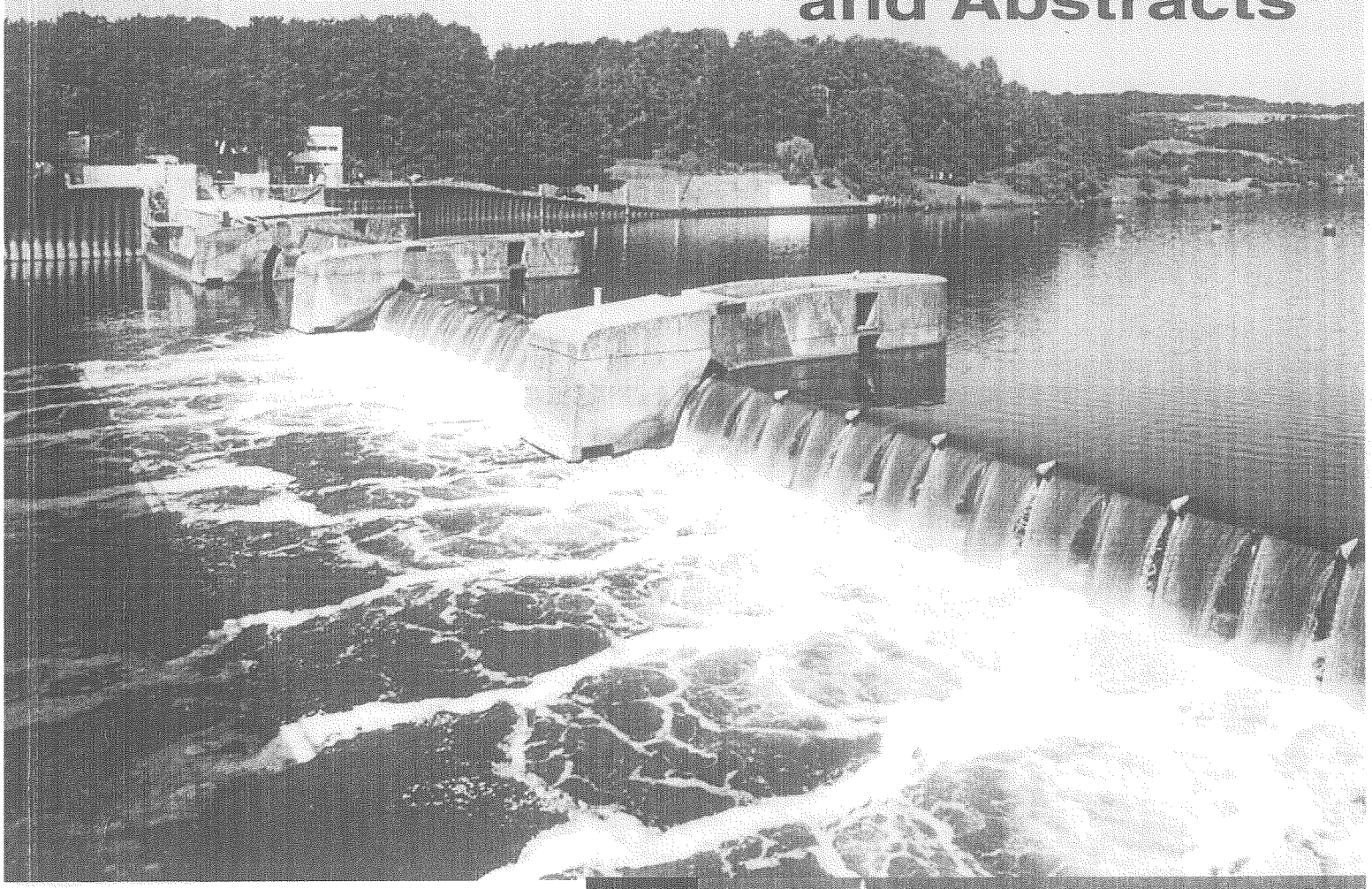
Proceedings and Abstracts



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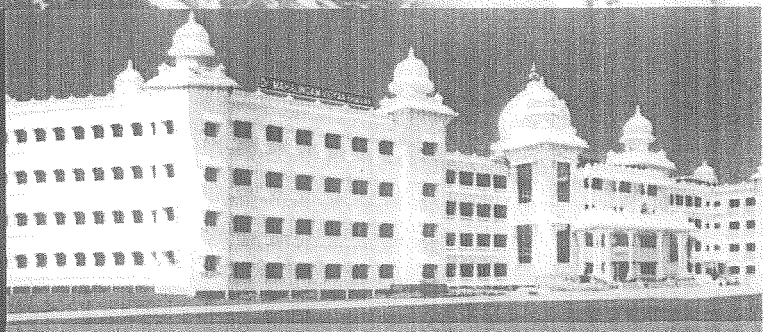
Specialist Conferences



8th Specialized Conference on Small Water and Wastewater Systems

and

2nd Specialized Conference on Decentralised Water and Wastewater International Network

February 06 - 09, 2008

Coimbatore, Tamil Nadu, INDIA

www.kct.ac.in / small2008

Day 2 ➢ Thursday February 7th, 2008

Hall A		**Plenary session**	**Chairman : K. Mathew**
9:00 – 10:30		**Tools to progress small water and wastewater systems: legislative measures, decision support for selection of technology, rating of property development and e-learning for capacity development** Goen Ho, Environmental Technology Centre, Murdoch University, Perth, Australia **Emerging Challenges for R&D in small waste water treatment plants for Urban and Peri-urban India** Hoysall Chanakya, Centre for Sustainable Technologies, Indian Institute of Science, Bangalore, India	
10:30 – 11:00		Break / Poster session	
Hall A		**Topic 3 : Anaerobic treatment**	**Chairman : R. Moletta**
11:00 – 12:15	180	**Treatment of domestic sewage in an anaerobic-aerobic fixed-bed reactor with recirculation of the liquid phase** A.P. De Olivera-Netto, M. Zaiat (Universidade de São Paulo, Brazil)	
	047	**Methodology for Conserving Energy in Circular Surface Aerators** Bimlesh Kumar, Achanta Ramakrishna Rao (Department of Civil Engineering, IISc, Bangalore, India)	
	082	**Optimization of the performance of an integrated anaerobic-aerobic system for domestic wastewater treatment** A. Tawfik, F. Gohary, A. Ohashi, H. Harada (National Research Center, Cairo, Egypt)	
Hall B		**Topic 10 : Wastewater reclamation and reuse**	**Chairman : J. Nair**
11:00 – 12:15	212	**Low cost adsorption technology for the re-use of laundry rinsing water** N. Schouten, L. van der Ham, A. de Haan, G.J. Euverink (Centre for Sustainable Water Technology, Netherlands)	
	186	**Small Scale Recycled Vertical Flow Constructed Wetland (RVFCW) for the Treatment and Reuse of Wastewater** Gross, M.I.M. Soares (Ben-Gurion University of the Negev, Israel)	
	036	**Sewage treatment in integrated system of UASB reactor and duckweed tank and its reuse in aquaculture** D. P. Mohapatra, M.M. Ghangrekar, A. Mitra (IIT Kharagpur, India)	
Hall C		**Topic 11 : Nutrient removal**	**Chairman : E. Paul**
11:00 – 12:15	096	**Removal of nitrogen and organic matter in swine wastewater by using membrane bioreactor and advanced oxidation process** Joonkyu Kim, Insang Song, Haeseok Oh, Joonhong Park, Younkyoo Choung (Yonsei University, Seoul, Korea)	
	137	**Improving Fertilizer Value of Anaerobic Effluents by Nitrification** P.D.C. Botheju, R. Bakke, Ø. Svalheim (Telemark University College, Norway)	
	041	**Volume reduction and concentration enhancement of nutrients of raw and digested blackwater by evaporation** Ö. Alp, J. Nie, F. Tettenborn, R. Otterpohl (Hamburg University of Technology, Germany)	
12:15 – 14:00		Poster session / Lunch	

Day 2 > Thursday February 7th, 2008 11:00 – 12:15
Topic 11 : Nutrient removal Hall C

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REMOVAL OF NITROGEN AND ORGANIC MATTER IN SWINE WASTEWATER BY USING MEMBRANE BIOREACTOR AND ADVANCED OXIDATION PROCESS

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Abstract There are many farmhouses with breeding domestic animals around the whole country. As increasing domestic animals, domestic regulation of livestock wastewater effluent was strict. Swine wastewater has to be treated rightly because that includes not only organic matter, nitrogen and phosphorus but also several matters with high concentration. In this study, it was analyzed that removal efficiency by using membrane bioreactor and advanced oxidation process about nitrogen and organic matter. Removal efficiency of each factor in final effluent was as follows: suspended sludge (99.88%), volatile suspended sludge (99.90%), COD (99.97%), TN (99.95%), NH_4^+-N (99.94%), NO_3^--N (99.92%). These results show that MBR-AOP system can be used to treat swine wastewater.
Keywords membrane bioreactor; nitrogen; organic matter; ozone; swine wastewater

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IMPROVING FERTILIZER VALUE OF ANAEROBIC EFFLUENTS BY NITRIFICATION

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Abstract Effluents from anaerobically digested wet organic wastes can be upgraded to a commercial fertilizer by increasing its concentration. Direct evaporation is not appropriate as it would lead to a considerable loss of ammonia at the relatively high pH typical to these digestates. Nitrification of the digestate prior to evaporation is suggested and evaluated through a series of experiments based on anaerobic digestate from a large scale biogas plant in Norway. The digestate is successfully nitrified to achieve above 75% NH_4-N conversions without any addition of extra alkalinity. pH of the digestate is reduced below 5.0 due to nitrification and therefore stabilising the remaining ammonical nitrogen in NH_4^+ form. Consequently, the partially nitrified digestate is stable and can be concentrated by evaporation. The aesthetic quality of the digestate is greatly improved by nitrification partly due to the improved sedimentation characteristics. More importantly, nitrification aided removing a greater part of the toxic heavy metals present in the raw digestate so that the final product can be categorized as a high ranking organic fertilizer. This study points out that the effluents from anaerobic digesters operating on wet organic wastes can successfully be converted into a high quality commercial grade liquid fertilizer through partial nitrification.
Keywords Anaerobic digestion; fertilizer production; heavy metals; nitrification; nutrients