Book of abstracts, 11th IWA Conference on Instrumentation Control and Automation - ICA2013

. Inra Lbe Narbonne, . Inra Transfert Technologies, . International Water Association

Scientific Program

Tuesday 17th of September 2013	
18h00-20h00	*Registration and welcome cocktail (at Salle des Synodes)*

Wednesday 18th of September 2013	
08h00-08h30	*Registration (at Narbonne theatre)*
08h30-09h00	**Introduction talks** *(plenary session)*
09h00-09h45	**Plenary session : Instrumentation, Control and Automation in wastewater - what happened from London 1973 to Narbonne 2013*, Gustaf Olsson*,** chairman: Peter Vanrolleghem, Canada
09h45-10h20	*Coffee break & poster session*

10h20-12h00: 1st parallel session	
W1.1- New sensors for monitoring WWTPs, rivers and sewer systems *room bleue,* chairman: Elena Ficara, Italy	**W2.1- New control strategies for improving WWTP performances** *room beige,* chairman: Victor Alcaraz, Mexico
Acoustic turbidity as online monitoring tool for rivers and sewer networks, A. Pallarès, S. Fischer, X. France, L. Pace, M.N. Pons, P. Schmitt FRANCE, IWA-12592	**Establishment of control strategies for chemically enhanced primary treatment based on online turbidity data,** S Tik, S Langlois, PA Vanrolleghem CANADA, IWA-12700
Assessment of an EIS sensor to monitor corrosion in cast iron pipes - Pilot study in the Barcelona water distribution network, S González Blanco, M Velasco Droguet, C Lagunas Calpe, C Müller Jevenois SPAIN, IWA-12676	**Effect of Sensor Location on Controller Performance in a Wastewater Treatment Plant,** U Rehman, M Vesvikar, T Maere, L Guo, P Vanrolleghem, I Nopens BELGIUM, IWA-12707
Assessment of field fluorimeters, A Gutierrez, A Assaad, Y Zhang, J Vernerey, X France, N Adouani, MN Pons FRANCE, IWA-12601	**Better treatment efficiencies and process economics with real-time coagulant dosing control,** L Wei, H. Ratnaweera, S. Heping NORWAY, IWA-12674
Electrical conductivity as a state indicator for the start-up period of anaerobic fixed-film reactors, Á. Robles, E Latrille, J Ribes, JP Steyer SPAIN, IWA-12748	**A novel control strategy for an efficient EBPR removal in WWTP: in-silico optimisation and experimental validation,** J Guerrero, A Guisasola, JA Baeza SPAIN IWA-12653
Novel method to quantify intracellular accumulation of polyphosphate in EBPR systems, DP Mesquita, AL Amaral, C Leal, M Carvalheira, JR Cunha, A Oehmen, MAM Reis, EC Ferreira PORTUGAL, IWA-12655	**Advanced Sludge Age Control Improves Wastewater Treatment and Hydraulic Capacity,** MBO Andersen, H Thomsen, T Guildal DENMARK, IWA-12586

12h00-13h00	*Lunch*
13h00-14h00	**ICA Scientific Group meeting** *(facultative but open to all)*

14h00-15h40: 2nd parallel session	
W1.2- Integration of O_2 and N_2O measurements for improved performances *room bleue*, chairman: Marie-Noëlle Pons, France	**W2.2- New softwares for WWTP simulation and control** *room beige,* chairman: Jens Alex, Germany
A novel microelectrode-based online system for monitoring N_2O emissions during wastewater treatment, R Marques, A Oehmen, M Pijuan PORTUGAL, IWA-12639	**Experience using auto-adjustment for improving sensor signal robustness at two large wastewater treatment plants,** D Lumley, P Lindell, P Lindqvist, M Heinonen SWEDEN, IWA-12649
Online monitoring of dissolved N_2O concentrations based on gas phase measurements, KE Mampaey, MCM van Loosdrecht, EIP Volcke BELGIUM, IWA-12645	**Model-based optimization of aeration systems in WWTPs,** S Beltrán, I Irizar, A de la Sota, J María Villanueva, E Ayesa SPAIN, IWA-12581
Energy Footprint Comparison of Activated Sludge versus Moving Biofilm Processes using In-line Oxygen Transfer Efficiency Signals, D Rosso, MK. Jeung, LE Larson, LM Jiang, MK Stenstrom UNITED STATES, IWA-12695	**A novel simulation platform to test WWTP control options,** J Alex, M Ogurek, M Schütze GERMANY, IWA-12604
Aeration control in a full-scale activated sludge wastewater treatment plant: impact on performances, energy consumption and N_2O emission, A Filali, Y Fayolle, P Peu, L Philippe, F Nauleau, S Gillot FRANCE, IWA-12641	**A Generalized Excel/C-compatible Simulink-based implementation architecture for fast model development and simulations,** T Oyetunde, R Gonzalez-Cabaleiro, F Ahmad, J Rodriguez UNITED ARAB EMIRATES, IWA-12626
Microsensors for oxidation reduction potential and dissolved oxygen measurements inside biofilms, A Wagner Lamon, B Cruz Gonzales, A Oliveira Almeida, J Roberto Campos BRAZIL, IWA-12582	**Automatic system for microbial fuel cells colonization,** IJ López-Prieto, I Torres Zúñiga, A Vargas, G Buitrón MEXICO, IWA-12721

15h40-16h10	*Coffee break & poster session*

16h10-17h50: 3rd parallel session

W1.3- Spectral methods for pollution characterization and bioprocess control	W2.3- Environmental performance assessment and N$_2$O dynamics
room bleue, chairman: Leiv Rieger, Canada	*room beige,* chairman: Changwon Kim, Korea
Lab-scale Anaerobic Digester Follow-up by Near Infra-Red Spectroscopy, A Boulanger, AF Coutier, A Ponthieux, C Laroche, R Treguer, M Poitrenaud, JA Cacho Rivero FRANCE, IWA-12666	Dynamics of N$_2$O emission from partial nitritation-anammox in a full-scale granular sludge reactor, CM Castro Barros, MRJ Daelman, KE Mampaey, MCM Van Loosdrecht, EIP Volcke BELGIUM, IWA-12603
Improvement of Performance of Fluorescent Molecular Sensors for Heavy Metal Ions by Theoretically Designing, H Satoh, A Hafuka, R Kandoh, H Yoshikawa, K Ohya, K Yamada, M Takahashi, S Okabe JAPAN, IWA-12657	Evaluating the environmental impacts of sewer systems in the Life Cycle Assessment of the entire urban wastewater system, O Gutierrez, P Roux, E Risch, C Boutin, L Corominas SPAIN, IWA-12677
Monitoring of membrane bioreactors for wastewater treatment using 2D fluorescence spectroscopy, C Galinha, G Carvalho, CAM Portugal, MAM Reis, JG Crespo PORTUGAL, IWA-12698	Reduction of Greenhouse Gas Emissions in Wastewater Treatment Plants by Using Carbon Emission Pinch Analysis, SH Pyo, SC Lee, MJ Kim, JT Kim, CK Yoo REPUBLIC OF KOREA, IWA-12587
Prediction of anaerobic biodegradability and bioaccessibility of municipal sludge by coupling sequential extractions with fluorescence spectroscopy: towards ADM1 implementation, J Jimenez, E Gonidec, JP Steyer, E Latrille, F Vedrenne, JA Cacho FRANCE, IWA-12630	Applications of Life Cycle Assessment for evaluation of several WWTPs operation W Piao, Y Kim, H Kim, M Kim, W Shin, C Kim REPUBLIC OF KOREA, IWA-12745
On-line Digital Holographic Microscope Being Used in Water Safety Plans, A Torokne, C Ilcsik, S Tokes HUNGARY, IWA-12644	Evaluating the environmental performance of wastewater treatment plants control strategies, HR Concepcion Gomez, D Vrecko, M Meneses, R Vilanova SPAIN, IWA-12584

17h50: End of the day

Thursday 19th of September 2013

09h00-09h45	Plenary session: 16 Years of Experience with Rule Based Control of Copenhagen's Sewer System, *Ane Loft Mollerup*, chairman: Eveline Volcke, Belgium
09h45-10h20	*Coffee break & poster session*

10h20-12h00: 1st parallel session

T1.1- State and unknown input estimation for bioprocesses and WWTPs	T2.1- Lessons from full scale practical applications of ICA in WWTPs
room bleue, chairman: Zhiguo Yuan, Australia	*room beige,* chairman: Doug Lumley, Sweden
State and Unknown Input Estimation for an Anaerobic Digestion System, M Sbarciog, J Moreno, E Guzman, A Vande Wouwer BELGIUM, IWA-12614	Improvement of aeration control in Ljubljana WWTP, D Vrecko, U Zupancic, R Babic SLOVENIA, IWA-12662
Fast estimation of the bioreaction rate in an aerobic SBR treating toxic wastewater using a discontinuous observer, J Oviedo, I Torres Zúñiga, A Vargas MEXICO, IWA-12660	Processes automation for the best practices in the wastewater treatment plants of the Autonomous Province of Trento, M Santinelli, AL Eusebi, G Gatti, P Battistoni ITALY, IWA-12610
On-line estimation of membrane fouling in MBRs, S Beltrán, J Odriozola, L Sancho, E Ayesa SPAIN, IWA-12599	Long-term evaluation of full-scale ammonium control in three large WWTPs, L Åmand, C Laurell, K Stark-Fujii, A Thunberg, B Carlsson SWEDEN, IWA-12608
Application of nearest neighbor method to predict influent wastewater flow and compositions, M Kim, H Kim, S Lee, Y Kim, W Piao, C Kim REPUBLIC OF KOREA, IWA-12749	Full-scale validation of a control system for energy saving in membrane bioreactors, H Monclus, S Casas, S Rovira, J Canals, J Comas, I Rodriguez-Roda SPAIN, IWA-12642
Calibration and validation of a phenomenological dynamic influent pollutant disturbance scenario generator using full-scale data, X Flores-Alsina, R Saagi, E Lindblom, C Thirsing, D Thornberg, KV Gernaey, U Jeppsson SWEDEN, IWA-12631	Energy saving on waste water treatment plants through improved online control: case study wwtp Antwerp-South, K De Gussem, A Fenu, T Wambecq, M Weemaes BELGIUM, IWA-12650
12h00-13h00	*Lunch*
13h00-14h00	*Poster session*

14h00-15h40: 2nd parallel session	
T1.2- Integrating data processing and Decision Support Systems for the optimization of WWTPs *room bleue*, chairman: Ulf Jeppsson, Sweden	**T2.2- Improved full scale practices for energy savings** *room beige,* chairman: Eduardo Ayesa, Spain
Energy and process data processing and visualisation for waste water treatment plant optimization, C Thürlimann, D Dürrenmatt, K Villez SWITZERLAND, IWA-12647	Control Structure Design of a Full-Scale WWTP under the Revamping Process, V Cunha Machado, J Lafuente, JA Baeza SPAIN, IWA-12611
Advanced process monitoring for wastewater processes, M O'Brien, S Mazier, M McEwan, K Black, M Ellner UNITED KINGDOM, IWA-12679	Lessons learnt from the application of advanced controllers in the Mekolalde WWTP: good simulation practices in control, I Irizar, S Beltran, G Urchegui, G Izko, O Fernandez, M Maiza SPAIN, IWA-12569
Separating real system dynamics from measurement failures and artefacts by means of automated data quality assessment methods, S Winkler, L Kornfeind, R Fuiko, A Winkelbauer AUSTRIA, IWA-12701	Exchange of ideas and improvement of online control on joint platform for the three large Copenhagen WWTPs, T Berenhard Önnerth, H Rønnow Thomsen, C Thirsing, T Guildal DENMARK, IWA-12668
Towards a decision support system to assess environmental and socio-economic impacts of Urban Wastewater Systems (UWS), A Hadjimichael, L Corominas, M Poch, J Comas SPAIN, IWA-12686	Integrating an on-line catchment simulator into wastewater treatment plant operation - 20 years later, C Hernebring, D Lumley, LG Gustafsson, H Strandner SWEDEN, IWA-12689
Shall we use hardware sensor measurements or soft-sensor estimates? Case study in a full-scale WWTP, H Haimi, M Mulas, F Corona, L Sundell, M Heinonen, R Vahala FINLAND, IWA-12663	Model-based evaluation of cost saving control strategies using real market variable energy tariffs, I Aymerich, N Pellicer, M Poch, Ll Corominas SPAIN, IWA-12618
15h40-16h10	*Coffee break & poster session*
T1.3- Decision Support System for improving water quality and risk management *room bleue*, chairman: Quim Comas, Spain	**T2.3- Young Water Professional session** *room beige,* chairman: Vicky Ruano, Spain
Model-based detection of organic matter depletion in SBRs, MN Cruz Bournazou, S Junne, G Wozny, P Neubauer, G Lyberatos GERMANY, IWA-12593	**The role of ICA in wastewater treatment plants: the point of view of academia** Peter Vanrolleghem, Alejandro Vargas, Gustaf Olsson.
Granularity Determination of Activated Sludge through On-Line Profiles by means of Case-Based Reasoning, X Berjaga, M Coma, J Meléndez, S Puig, J Colprim, J Colomer SPAIN, IWA-12583	**The role of ICA in wastewater treatment plants: the point of view of industry** Leiv Rieger, Doug Lumley, Jing Liu.
Sensor fault detection and diagnosis based on bilinear mass balances in wastewater treatment systems, K Villez, PA Vanrolleghem, L Corominas SWITZERLAND, IWA-12744	**The role of ICA in wastewater treatment plants: where is it now and where should it go? What is missing from the point of view of academia and industry?** Debate between young water professionals and seniors researchers.
Data derived sensor fault detection in the activated sludge process of the Viikinmäki wastewater treatment plant, H Haimi, M Mulas, F Corona, S Marsili-Libelli, P Lindell, M Heinonen, R Vahala FINLAND, IWA-12664	
Detecting membrane fouling occurrences in a full-scale membrane bioreactor with principal component analysis, L De Temmerman, W Naessens, T Maere, S Marsili-Libelli, K Villez, H Temmink, I Nopens BELGIUM, IWA-12694	
17h50: End of the day	

Friday 20th of September 2013	
09h00-09h45	**Plenary session: Lessons learned from the WWTP benchmarking exercise,** *Krist V. Gernaey*, chairman: Alejandro Vargas, Mexico
09h45-10h20	*Coffee break & poster session*

10h20-12h00: 1st parallel session

F1.1- Modeling and control of MBRs *room bleue*, chairman: Ingmar Nopens, Belgium	**F2.1- Fault Detection and Isolation in WWTP** *room beige,* chairman: Stefano Marsili-Libelli, Italy
Integrated control of MBRs: effects of aeration, M Dalmau, M Castellà, S Gabarrón, J Odriozola, L Sancho, E Ayesa, I Rodríguez-Roda, J Comas SPAIN, IWA-12667	**Monitoring Network for Surveillance of WWTP Effluents,** J Cros Herrero, A Gonzalez Catena, M Farré Torras, M Batlle i Ribas SPAIN, IWA-12575
ICA applied to Submerged Anaerobic MBRs (SAnMBRs) for domestic wastewater treatment, A Robles, F Durán, M Victoria Ruano, J Ribes, A Rosado, A Seco, J Ferrer SPAIN, IWA-12636	**Low-cost method for monitoring sewer overflows in an entire network: from manual to automatic data analysis,** A Montserrat-Royuela, A Benzal, O Gutierrez, L Corominas SPAIN, IWA-12656
Model-based optimisation of MBR plants for C and N removal, JV Odriozola, S Beltrán, L Sancho, M Dalmau, J Comas, I Rodríguez-Roda, E Ayesa SPAIN, IWA-12617	**Integrated System for Evaluating and Operating Water Distribution Network,** SH Kim, HS Kim, SM Park, DY Choi REPUBLIC OF KOREA, IWA-12719
Dynamic Control of Membrane Filtration in Membrane Bioreactors (MBR), R Van den Broeck, AS Pattyn, J Van Impe BELGIUM, IWA-12688	**Weather radars used in online control of wastewater systems,** T Sander Poulsen, T Berenhard Önnerth, MR Rasmussen, J Samsø Pedersen, C Thirsing DENMARK, IWA-12588
Modeling of submerged membrane bioreactors with a view to control, GA Pimentel, A Vande Wouwer, A Rapaport, J Harmand BELGIUM, IWA-12675	**Mode of Risk Management and Precaution for Storm Water in a City,** C Feng, J Wang, Y Zhang, X Zhang CHINA, IWA-12643
12h00-13h00	*Lunch*

14h00-15h40: 2nd parallel session

F1.2- Control of sewer systems and anaerobic digestors *room bleue*, chairman: Altunay Perendeci, Turkey	**F2.2- Expanding existing models for better modeling practices and prediction of N$_2$O production** *room beige,* chairman: Sylvie Gillot, France
Following a drop of water from the cloud, throughout the sewer system, into the receiving water - Model predictive control of integrated sewer-wastewater treatment systems, P Steen Mikkelsen DENMARK, IWA-12692	**Toward modeling of biogas plants in engineering practice,** M Ogurek, I Seick, O Kujawski, J Alex GERMANY, IWA-12693
Design of self-optimizing control structures in sewer systems, I Montero-Castro, M Mauricio-Iglesias, AL Mollerup, G Sin DENMARK, IWA-12633	**Reducing Complexity when Calibrating a Model describing the Reactions of Ozone with NOM: Experimental and Numerical Approaches,** P Mandel, P Roche, HH Pham, D Wolbert, Daniel Jung FRANCE, IWA-12697
Controlling chemical dosing for sulfide mitigation in sewer networks using a hybrid automata control strategy, Y Liu, R Ganigué, Z Yuan AUSTRALIA, IWA-12696	**Expanding activated sludge models with additional processes: A case study based on nitrous oxide production by autotrophic ammonia-oxidizing bacteria,** L Snip, R Boiocchi, X Flores-Alsina, U Jeppsson, K Gernaey DENMARK, IWA-12706
Automated control system for anaerobic treatment, JF van Geest, K Cuadros Perez, B Heffernan NETHERLANDS, IWA-12682	**Adaptation and identification of models for nitrous oxide (N$_2$O) production by autotrophic nitrite reduction,** M Pocquet, I Queinnec, M Sperandio FRANCE, IWA-12687
A switching control strategy based on alkalinity to optimize biogas outflow in the start-up of an anaerobic digester, CE Robles Rodriguez, E Latrille, J Harmand, V Alcaraz González, V González Álvarez, JP Steyer MEXICO, IWA-12743	**Evaluation of greenhouse gas emissions from membrane bioreactors: development of a new mathematical model,** G Mannina, A Cosenza, G Viviani ITALY, IWA-12632
15h40-16h10	*Coffee break*
16h10-17h00	*Conclusion Talks (16h10-17h00) (plenary session)* *Announcement of the next conference location*

17h00: End of the day

| **19h00-23h30** | *Gala dinner (at Abbaye de Fontfroide)* |