



International
Water Association

Workshop Program

Final MBR-Network Workshop

“Salient outcomes of the European
R&D projects on MBR technology”

Organised By:



Sponsored By:



Supported By:



Specialised Conference



31 March – 1 April 2009
Berlin, Germany

Hosted by Trade Fair « Wasser Berlin 2009 »

www.mbr-network.kompetenz-wasser.de

Tuesday 31 March 2009 – Messe Berlin, Hall 7, Room New York 1

- 8:00 AM** Opening “Wasser Berlin” and registration “MBR-Network”
- 9:30 AM** **Session “Opening and Key Notes”**. Chair: **B. Lesjean, KWB, Germany**
Opening Addresses
R. Ben-Aim, Chairman of IWA Specialist Group “Membrane Technologies“
EC activities and strategy on membrane R&D. *A. Tilche, M. Schoupe*
Trends in world-wide membrane bioreactor research. *N. Cicek, W. Yang*
MBRs and the TMP jump – self accelerating fouling phenomena. *T. Fane*
Quorum quenching: a new biofouling control paradigm in MBRs. *C.-H. Lee, K.-M. Yeon, J.-H. Kim*
- 11:00 AM** Coffee
- 11:30 AM** **Session “Membrane fouling characterisation and monitoring”**. Chair: **J. Crespo, IBET, Portugal**
Development and application of a proteins and polysaccharides sensor for on-line fouling control in membrane bioreactors.
R. Mehrez, M. Ernst, V. Iversen, A. Drews, M. Kraume, M. Jekel
The European MBR tour of the Delft filtration characterisation method.
J. H.J.M. van der Graaf, A. F. van Nieuwenhuijzen, S. Geilvoet, A. A. Moreau, M. Lousada Ferreira, P. Krzeminski
The quest for indicators of membrane fouling in membrane bioreactor systems.
T. de la Torre, J. Stueber, V. Iversen, A. Drews, B. Lesjean
New developments in membrane bioreactors characterisation and monitoring.
C. F. Galinha, G. Carvalho, C. Portugal, R. Oliveira, M. T. B. Crespo, M. A. M. Reis, J. G. Crespo
Foulant dynamics on supported media membrane bioreactor.
R. Aryal, S. Vigneswaran, J. Kandasamy, A. Grasmick
Organic matter in MBR sludge waters: Foulant identification and cleaning considerations.
A. Fenu, O. Braimah, J.W. Mulder, M. Kennedy, G. Amy
- 1:00 PM** Lunch
- 2:00 PM** **Session “Membrane fouling control and cleaning”**. Chair: **C. Cabassud, INSA, France**
Aeration and fouling dynamics in HF SMBR : determining criteria and phenomena.
J. Lebègue, M. Héran, A. Grasmick
New advances in MBR aeration and fouling control.
S. Pollet, B. Teychene, S. Khirani, M. Sperandio, C. Cabassud, C. Guigui
Sludge filterability and dewaterability in municipal MBR.
G. Guglielmi, D. Chiarani, G. Andreottola
Effects of various flux enhancers in MBR: lab tests vs. pilot scale operation.
V. Iversen, S. Hermann, A. Drews, R. Mehrez, M. Ernst, M. Jekel, B. Lesjean, M. Kraume
Fouling origin and cleaning strategies in MBR.
A. Grelot, C. Machinal, A. Tazi-Pain, A. Grasmick
Optimised electrospun nanofibers for municipal wastewater treatment by Textile Bioreactors (TBR).
E. Fatarella, L. Lombardi, V. Iversen, S. Paulussen, U. Brüß, B. Lesjean, M. Kraume
- 3:30 PM** Coffee
- 4:00 PM** **Session “Process modelling and control”**. Chair: **J. van der Graaf, TUD, Netherlands**
Specificities of ASM-based biological modelling of MBR processes.
A. Fenu, G. Guglielmi, J. Jimenez, B. Lesjean, I. Nopens, J. Roels, D. Saroj, M. Sperandio
Biological modelling of membrane bioreactors and impact of primary sedimentation.
J. Jimenez, P. Grelot, A. Tazi-Pain
Technical feasibility and optimal control strategy of dual (hybrid) MBR-CAS concepts for plant refurbishment.
W. De Wilde, K. Moons, D. Bixio, C. Thoeye, G. De Geldre
Advanced control of MBR systems using on-line fouling sensor measurements.
E. Brauns, E. Van Hoof, C. Huyskens, H. Elslander, F. Vanhoof, P. Lens, H. De Wever
CFD analysis of MBR-units, Recommendations for system design and operation.
J. Saalbach, M. Hunze
Evaluation of mixing efficiency & nutrient removal in membrane bioreactors via CFD modelling with experimental validation.
Y. Wang, M. Brannock, G. Leslie
- 5:30 PM** **Poster sessions**
- 7:00 PM** Dinner “Wasser Berlin”, location: “Palais am Funkturm”, Masurenallee, Berlin
 Open Door 6:30 PM



Workshop Dinner sponsored by Veolia Water

The workshop registration will include a participation to the conference gala of Wasser Berlin 2009 which will take place in the evening of 31 March 2009

Wednesday 1 April 2009 – Messe Berlin, Hall 7, Room New York 1

- 8:00 AM** Opening “Wasser Berlin”
- 9:00 AM** **Session “Novel European MBR technologies”**. Chair: A. Joss, EAWAG, Switzerland
Assessment principles for membrane and membrane module development: a case study.
S. Buetehorn, J. Kochan, C.N. Koh, T. Wintgens, D. Volmering, K. Vossenkaul, T. Melin
Developpement of new hollow fiber modules for MBR application.
W. Bosq, F. Saux, J. M. Espenan, O. Lorain
Development of a novel Fibre Sheet membrane for MBR's: the FiSh.
M. Heijnen, R. Winkler, M. Vogg, G. Roeder, P. Berg
Innovative European made flat-sheet module system for MBR application.
B.Kreckel, U. Brüss, A. Grélot, A. Tazi-Pain
From concept to international export of European MBR filtration system.
D. Volmering, K. Vossenkaul
Development of containerised turn-key MBR plants.
D. Vilim, P. Hlavinek, J. Kubik, P. Hlustik
- 10:30 AM** Coffee
- 11:00 AM** **Session “Process integration and new processes”**. Chair: P. Hlavinek, BUT, Czech Republik
The effect of organic peak loads on membrane biofouling in a pilot scale MBR treating municipal wastewater.
B. Zwickelpflug, M. Böhler, A. Joss, H. Siegrist
Decision tree for full-scale submerged MBR configurations.
H. De Wever, C. Brepols, B. Lesjean
Operational experience of MBR demonstration plant with post denitrification in Berlin-Margaretenhöhe (ENREM-Project).
C. Lüdicke, J. Stüber, R. Gnirss, B. Lesjean, M. Kraume
Operational experiences with the hybrid MBR Heenvliet, a smart way of retrofitting.
J.W. Mulder
Challenges and potentials of biofilm-MBR for municipal wastewater treatment.
T.O. Leiknes, J. Phattaranawik, I. Ivanovic
Anaerobic membrane bioreactor for domestic wastewater treatment.
G. Gugliemi, D. Avesani, C. Cabassud, V. Yvenat, S. Pollet, O. Lorain, A. Schmidt, B. Pfaff, S. Pillay, K. Foxon, J. K. Bwapwa, C. Buckley
- 12:30 PM** Lunch
- 1:30 PM** **Session “Full-scale implementations, economics and market”**. Chair: T.O. Leiknes, NTNU, Norway
MBR standardisation in Europe: market interest, technical potential and initiation of formal actions.
W. De Wilde, A. Tazi-Pain, M. Richard, B. Lesjean, G. de Gueldre
Major items and outcomes of the CEN Workshop Agreement N° 34 on Submerged Membrane Bioreactor (MBR) Technology.
F.-B. Frechen
An aeration energy model for an immersed membrane bioreactor.
B. Verrecht, G. Gugliemi, J.W. Mulder, C. Brepols, S. Judd
Potential for MBR applications for wastewater treatment in the Middle East and North African region.
M. J. Bino, S. N. Al-Beirut, M. Wade
Potential and implementation of full-scale dual (hybrid) MBR-CAS concepts in newly accessed countries.
D. Bixio, L. Maes, W. De Wilde, J. Deurinck, C. Thoeye, G. De Gueldre
Economic aspects of large scale membrane bioreactors.
C. Brepols, H. Schäfer, N. Engelhardt
The European MBR market: specificities and future trends.
E. Huisjes, K. Colombel, B. Lesjean
- 3:15 PM** Coffee
- 3:30 PM** **Final key-note, award and closure session**. Chair: R. Ben-Aim, IWA Specialist Group “Membrane Technologies”
Submerged MBR technology: an unfinished international adventure of 20 years.
K. Yamamoto
- 4:30 PM** End of workshop *K. Yamamoto*



Posters Program

Alnaizy, R., Sarin, V. **'Performance Assessment of MBR Applications for Metropolitan Wastewater Treatment in the United Arab Emirates'**

Aryal, R.K., Vigneswaran, S., Kandasamy, J. **'Effect of aeration and viscosity in submerged membrane reactor'**

Ávila-Arias, J.A., Delgado-Luna, I.P., Bernal-Martínez, A., Cuevas-Rodríguez, G. **'Development and evaluation of a Discontinuous reactor of moving bed and submerged membranes for the waste water treatment'**

Binz, C. **'Development Perspectives of on-site MBR Treatment plants in the municipal wastewater sector of China'**

Boland, T., Hartley, K. **'Cleveland Bay Wastewater Treatment Facility – Retrofitting Membranes within Existing Structures'**

Bouju, H., Buttiglieri, G., Malpei, F. **'Comparison of Pharmaceutical Substances Removal between a Full Scale Conventional Activated Sludge Process and a MBR Pilot Plant'**

Bouju, H., Hommes, G., Wintgens, T., Corvini, P. **'The Fate of 14C-Radio-labelled Diclofenac and 4'-Hydroxydiclofenac in a Laboratory Scale MBR'**

Casas López, J.L., Sánchez Pérez, J.A., Ballesteros Martín, M.M., García Sánchez, J.L., Malato Rodríguez, S. **'Integration of photocatalysis and biological oxidation in MBR for pesticides degradation'**

Chang, C.Y., Chang, C.J., Chang, J.S., Vigneswaran, S. Ben Aim, R. **'Techno-Economic Study of a Pilot-Scale MBR Plant for Pharmaceutical Wastewater Treatment'**

Charlery, C., Drews, A., Kraume, M., Kroh, L. **'Advanced analysis of polysaccharides in MBR fouling by chromatography'**

Chung, J.H., Heo, Y.R., Lee, J.H., Lee, E.S. **'Long Term Operating Experience with Pilot plant MBR using Submerged Hollow Fiber Membrane'**

Di Fabio, S., Fatone F., Bolzonella D., Cecchi F. **'Industrial Xenobiotics Removal from Urban Wastewater in Membrane Bioreactors: Pilot and full Scale Experiences in Italy'**

Drews, A., Charlery, C., Kroh, L., Kraume, M. **'Influence of nitrifiers on SMP concentration, rejection and fouling in MBR'**

Etxebarria, J., Iturbe, D., Urkiaga, A. **'Optimization of Submerged Membrane Bioreactor Process for Wastewater Treatment by Minimizing the Fouling Phenomenon'**

Fatarella, E., Cioni, I., Ciabatti, I., Venturini degli Esposti, E. **'Advanced Purification Of Industrial And Mixed Wastewater By Combined Membrane Filtration And Sonochemical Technologies'**

Fauveau, C. **'Use of MBR for Treatment of Effluent from Liquefied Natural Gas Industry'**

Galinha, C.F., Portugal, C., Carvalho, G., Guglielmi, G., Chiarani, D., Andreottola, G., Oliveira, R., Reis, M.A.M., Crespo, J.G. **'2D-Fluorescence spectroscopy as a novel monitoring tool in MBR modelling for wastewater treatment systems'**

Habib, J.A., Vial, D. **'Challenge Testing Membrane Microfilters at a Wastewater Facility in the New York City Watershed'**

Henkel, J., Wagner, M., Cornel, P. **'Oxygen transfer in membrane bioreactors operating at high sludge retention times'**

Herr, J., Kazner, C., Wintgens, T., Melin, T. **'Impact of operation conditions on the removal of bulk organics and bisphenol A in a pilot MBR'**

Hermann, S., Röttgers, N., Iversen, V., Drews, A., Lesjean, B., Kraume, M. **'Membrane Bioreactors - Influence of dynamic operation'**

Herrera-Robledo M., Calderon K., Morgan JM, Noyola A. **'Toward biofouling description in sidestream An-MBR treating municipal wastewater: advanced autopsies on uf modules'**

Huyskens, C., Brauns, E., Van Hoof, E., De Wever, H. **'Influence of selected operational parameters on (ir)reversible fouling in MBR's'**

Kando, K., Suzuki, S., Itokawa, H., Inoki, H., Nakazawa, H. **'Pilot-scale demonstration and optimization of side-stream MBR using ceramic membrane'**

Khongnakorn, W., Vachoud, L., De la Londe, M., Wisniewski, C. **'Rheological properties of membrane bioreactor sludge: Influence of total suspended solids and soluble organic matter'**

Kochan, J., Wintgens, T., Wong, J.E., Melin, T. **'Separation Performance of Polyelectrolyte-Modified Ultrafiltration Membranes'**

Krzeminski, P., Atasoy, E., Van Nieuwenhuijzen, A., Van der Graaf, J. **'Comparison of the operational processes of three different full-scale membrane bioreactors'**

Lazarova, V. **'Optimisation of MBR Operation and Reliability Using Failure Mode Analysis'**

Lebegue, J., Heran, M., Grasmick, A. **'MBR aeration and fouling, different levels of observation'**

Matulová, Z., Pikorová, T., Hlavínek, P., Drtil, M. **'Detailed monitoring of household MBR plant'**

Meabe, E., Sancho, L. **'Searching for optimum fouling control strategies'**

Monclus, H., Ferrero, G., Sipma, J., Comas, J. Rodríguez-Roda, I. **'Decision Support System for mbr fouling control'**

Moreau, A., Ferreira, M.L., Van Nieuwenhuijzen, A., Van der Graaf, J. **'Seasonal effect: impact on MBR sludge filterability depending on membrane configurations'**

Moreau, A., Krzeminski, P., Van Nieuwenhuijzen, A., Van der Graaf, J. **'Reversible fouling quantifications: any links with full-scale plant permeability?'**

Pot, M.A., Van Agtmaal, J., De Boks, P.A., Veraart, A.M.J., Schonewille, H. **'Airlift MBR at municipal WWTP Terneuzen - Pilot research supports full scale implementation'**

Rathnasiri, P.G., Botheju, D., Bakke, R. **'Effects of Biofilm Formation on Oxygen Transfer Membranes in Membrane Micro-Aerated Anaerobic Digesters'**

Rios N., Nopens I., Vanrolleghem P.A. **'Hydrodynamic CFD simulation of a two-phase flow in an ultrafiltration membrane tube for a side-stream membrane bioreactor'**

Rios N., Nopens I., Vanrolleghem P.A. **'Mass transfer coefficient determination of a two-phase flow for an UF membrane in a side-stream MBR'**

Schaller, J., Drews, A., Kraume, M. **'Effect of High Sludge Ages on the Sludge Characteristics in Membrane Bioreactors'**

Silva, A.F., Carvalho, G., Lousada-Ferreira, M., Van Nieuwenhuijzen, A., Guglielmi, G., Crespo, J.G., Reis, M.A.M., Crespo, M.T.B. **'Microbial population structure of pilot- and full-scale membrane bioreactors'**

Tôres, A.P.R., Santiago, V.M.J., Piasek, C.B. **'Performance Evaluation of Submerged Membrane Bioreactor Pilot Units for Refinery Wastewater Treatment'**

Van Bentem, A.G.N., Kubota, A.C., Nijman, N., Hashimoto, T.B. **'Asahi Kasei MBR pilot research at the Utrecht WWTP'**

Van den Brink, P.F.H., Smith, G.O.J., Zwijnenburg, A., Van Loosdrecht, M.C.M. **'Fouling behaviour of model solutions and sludge fractions in membrane bioreactors'**

Van der Marel, P., Zwijnenburg, A., Kemperman, A., Wessling, M., Temmink, H., Van der Meera, W. **'Membrane properties influencing fouling in MBR'**

Villwock, J., Iversen, V., Drews, A., Lesjean, B., Kraume, M. **'Combination of flux enhancers for MBR'**

Wang, Y., Brannock, M., Leslie, G. **'Evaluation of Mixing efficiency & Nutrient removal in membrane bioreactors via cfd modelling with experimental validation'**

Yang, F., Bick, A., Oron, G. **'Wastewater Upgrading Technologies: A Preliminary Comparison Using Analytical Hierarchical Process (AHP) Analysis'**

Yang, F., Bick, A., Oron, G. **'Standardization of Membrane Bio-Reactor Working Groups Using Partial Order Scalogram Analysis (POSA)'**

Yang, F., Wang, Y., Gilron, J., Brenner, A., Oron, G., Bick, A. **'The Effect of Biofilm Carriers Filling Ratio and Mixing Regime on Biomass Distribution, Fouling Rate, and Process Efficiency in a Hybrid Growth Membrane Bioreactor (HG-MBR)'**

Zimmermann, B., Krause, S., Siembida, B., Cornel, P. **'Enhanced cleaning process for MBR'**