

Contents

Volume 51/4–6

Selected papers presented at the International Conference on Desalination for the Environment, Clean Water and Energy, European Desalination Society, 23–26 April, 2012, Barcelona, Spain

Further papers appear in Vol. 51/1–3 (January 2013) and 51/7–9 (February 2013)

See full contents of the conference papers at pages x–xxiii

PV energy

Batch ED fed by a PV unit: a reliable, flexible, and sustainable integration F. Círez, J. Uche, A.A. Bayod and A. Martínez (Zaragoza, Spain).....	673
Evaluation of a solar membrane distillator hybridized with a photovoltaic cell K. Murase, K. Chikamatsu and T. Kyuno (Tokyo, Japan).....	686
Photovoltaic-based combined electricity and clean water production for remote small islands D. Tiligadas, E. Kondili and J.K. Kaldellis (Athens, Greece).....	695
The modular design of photovoltaic reverse osmosis systems: making technology accessible to nonexperts A.M. Bilton and S. Dubowsky (Cambridge, USA).....	702
Assessment of the recovery of photovoltaic cells cutting fluid by chemical pretreatment and ultrafiltration N. Drouiche (Algiers, Algeria), M.W. Naceur, H. Boutoumi, N. Aitmessaaoudene, R. Henniche and T. Ouslimane (Blida, Algeria)	713

Energy saving

Consideration of energy savings in SWRO C.R. Bartels (Oceanside, USA) and K. Andes (Perth, Australia)	717
Membrane feedpump optimization for efficiency J. Lawler and F. Grondhuis (Vernon, USA)	726
More than 30% energy saving seawater desalination system by combining with sewage reclamation H. Takabatake, K. Noto, T. Uemura and S. Ueda (Tokyo, Japan)	733
Unprecedented system efficiency and simplicity yields exceptionally low cost of permeate in 5,000 ton/day SWRO system D. Duncavage and C. Bly (Monroe, USA)	742
Different designs in energy savings of SWRO Plant of Las Palmas III R. Lemes, R. Falcon, R. Arocha, J. Curbelo, V. Platas and L. De Lorenzo (Las Palmas, Spain)	749

Energy recovery

Optimized train configuration for mega-scale seawater RO systems with turbocharger energy recovery E. Oklejas and J. Hunt (Monroe, USA)	759
Reduction of energy consumption in seawater reverse osmosis desalination pilot plant by using energy recovery devices Y. Kim, M.G. Kang, S. Lee, S.G. Jeon and J.-S. Choi (Seoul, Korea)	766
The availability and security of water production using reliable energy recovery technologies R. Bosleman and R. Clemente (San Leandro, USA)	772
Online cleaning of tubular heat exchangers in water service systems using projectiles M.R. Jalalirad, M.R. Malayeri and R. Preimesser (Stuttgart, Germany)	780

Forward osmosis

A novel implementation of water recovery from whey: “forward–reverse osmosis” integrated membrane system C. Aydiner, S. Topcu, C. Tortop, F. Kuvvet, D. Ekinci, N. Dizge and B. Keskinler (Kocaeli, Turkey)	786
Preliminary studies of water treatment using forward osmosis Y. Xie, R. Ma and S. Xia (Shanghai, China)	800

MED/MSF/Humidification-dehumidification

An improved model for multiple effect distillation K.H. Mistry (Cambridge, USA), M.A. Antar (Dahran, Saudi Arabia) and J.H. Lienhard V (Cambridge, USA)	807
Effect of flame spray coating on falling film evaporation for multi effect distillation system R. Abraham and A. Mani (Chennai, India)	822
Heat transfer performance and bundle-depth effect in horizontal-tube falling film evaporators S. Shen, G. Liang, Y. Guo, R. Liu and X. Mu (Dalian, China)	830
Experimental investigations on the performance of an air heated humidification–dehumidification desalination system M.A. Antar and M.H. Sharqawy (Dahran, Saudi Arabia)	837
Techno-economic analysis of hybrid high performance MSF desalination plant with NF membrane A.N.A. Mabrouk and H.E.S. Fath (Egypt)	844
Analysis of adjusting method for load performance of TVC-MED desalination plant B. Zhang, L. Yang, S. Shen, X. Liu and K. Zhang (Dalian, China)	857
Effect of fixed bed characteristics on the performance of pulsed water flow humidification–dehumidification solar desalination unit A.H. El-Shazly, A.A. Al-Zahrani, Y.A. Al-Hamed and S.A. Nosier (Jeddah, Saudi Arabia)	863
Numerical analysis of thermodynamic behaviour of falling film outside a horizontal tube L. Yang, C. Xue, B. Zhang, K. Zhang and S. Tao (Dalian, China)	872

Scaling

Remineralization of desalinated water by limestone dissolution with carbon dioxide H. Shemer, D. Hasson, R. Semiat (Haifa, Israel), M. Priel, N. Nadav, A. Shulman and E. Gelman (Tel-Aviv, Israel)	877
New insight into the relation between bulk precipitation and surface deposition of calcium carbonate mineral scale V. Eroini, A. Neville, N. Kapur and M. Euvrard (Besançon, France)	882
Scaling tendency assessment in reverse osmosis modules H. Hchaichi (Gabes, Tunisia), H. Elfil (Soliman, Tunisia), P. Guichardon (Marseille, France) and A. Hannachi (Gabes, Tunisia)	892
New insights into silica scaling on RO-membranes A. Kempfer (Ludwigshafen, Germany), T. Gaedt (Trostberg, Germany), V. Boyko, S. Nied (Ludwigshafen, Germany) and K. Hirsch (Wyandotte, USA)	899
The performance of anti-scalants on silica-scaling in reverse osmosis plants W. Hater, C. zum Kolk (Düsseldorf, Germany), G. Braun and J. Jaworski (Cologne, Germany)	908
New anti-scalant performance evaluation for MSF technology A. Mohamed, J. Robert, A.N. Mabrouk, I. Ahmad, A. Nafey, J.S. Choi, J.K. Park (Dubai, UAE), S. Nied and J. Detering (Ludwigshafen, Germany)	915
A sustainable antiscalant for RO processes G. van Engelen and R. Nolles (Breda, The Netherlands)	921
Simple process for hardening desalinated water with Mg ²⁺ ions D. Hasson, R. Semiat, H. Shemer, M. Priel and N. Nadav (Israel)	924
Selection of nanofiltration membranes as pretreatment for scaling prevention in SWRO using real seawater L. Llenas, G. Ribera, X. Martínez-Lladó, M. Rovira and J. de Pablo (Manresa, Spain)	930

Amorphous aluminosilicate scaling characterization in a reverse osmosis membrane S. Salvador Cob, C. Beaupin, B. Hofs, M.M. Nederlof, D.J.H. Harmsen, E.R. Cornelissen (Nieuwegein, The Netherlands), A. Zwijnenburg (Leeuwarden, The Netherlands), F.E. Genceli Güner and G.J. Witkamp (Delft, The Netherlands)	936
Fouling/RO	
The use of microbial and chemical analyses to characterize the variations in fouling profile of seawater reverse osmosis (SWRO) membrane C.-L. de O. Manes, M.T. Khan (Thuwal, Saudi Arabia), V.G. Molina (Tarragona, Spain) and J.-P. Croue (Thuwal, Saudi Arabia)	944
Membrane fouling in seawater desalination processes caused by harmful dinoflagellate <i>Cochlodinium polykrikoides</i> M. Kuroiwa, T. Masuda, T. Omura, A. Wongrueng, K. Oguma, H. Sakai, M. Murakami and S. Takizawa (Tokyo, Japan)	950
Evaluating impact of fouling on reverse osmosis membranes performance N. Peña, S. Gallego, F. del Vigo (Madrid, Spain) and S.P. Chesters (Middlewich, UK).....	958
Fouling of reverse osmosis membranes by cane molasses fermentation wastewater: detection by electrical impedance spectroscopy techniques J. Cen, J. Kavanagh, H. Coster and G. Barton (Sydney, Australia)	969
Fouling/MSF	
Restoration of “dead” clay fouled membranes U. Farooq and S. Sheikh (Pakistan)	976
An application of dynamic simulation for 16.2 MIGD MSF desalination plant H.S. Choi, B.G. Bak, G.M. Lee, S.M. Kim and J.K. Park (Changwon, Korea)	983
Biofouling	
Antibacterial efficiency of composite nano-ZnO in biofilm development in flow-through systems A. Ronen, R. Semiat and C.G. Dosoretz (Haifa, Israel)	988
Impact of biofouling in intake pipes on the hydraulics and efficiency of pumping capacity H. Polman (Arnhem, The Netherlands), F. Verhaart (Delft, The Netherlands) and M. Bruijs (Arnhem, The Netherlands)	997
Surface analysis for the identification of effective strategies to fight marine biofouling C. Hippius, S. Nied, G. Schürmann and A. Feßenbecker (Ludwigshafen, Germany)	1004
TEP	
Transparent exopolymer particles as critical agents in aquatic biofilm formation: implications for desalination and water treatment T. Berman (Migdal, Israel)	1014
Characterisation of transparent exopolymer particles (TEP) produced during algal bloom: a membrane treatment perspective L.O. Villacorte, Y. Ekowati (Delft, The Netherlands), H. Winters (Thuwal, Saudi Arabia), G.L. Amy, J.C. Schippers and M.D. Kennedy (Delft, The Netherlands)	1021
Three years operational experience with ultrafiltration as SWRO pre-treatment during algal bloom R. Schurer (Rotterdam, The Netherlands), A. Tabatabai, L. Villacorte, J.C. Schippers and M.D. Kennedy (Delft, The Netherlands)	1034
Microfiber filtration of lake water: impacts on TEP removal and biofouling development G. Eshel (Galil Elyon, Israel), H. Elifantz (Jerusalem, Israel), S. Nuriel, M. Holenberg (Galil Elyon, Israel) and T. Berman (Migdal, Israel)	1043
Removal of polysaccharide foulants from reverse osmosis feedwater using electroadSORptive cartridge filters R. Komlenic (USA), T. Berman (Migdal, Israel), J.A. Brant, B. Dorr (Laramie, USA), I. El-Azizi (Tripoli, Libya) and H. Mowers (USA)	1050

MBR

The effects of operation conditions of carbon/nitrogen ratio and pH on nitrogen removal in intermittently aerated membrane bioreactor (IAMBR)	1057
H. Benaliouche, D. Abdessemed and G. Nezzal (Algiers, Algeria)	1057
The IFAS-MBR process: a compact combination of biofilm and MBR technology as RO pretreatment	
T. De la Torre, C. Rodríguez (Barcelona, Spain), M.A. Gómez (Granada, Spain), E. Alonso (Seville, Spain) and J.J. Malfeito (Barcelona, Spain).....	1063
The anaerobic MBR for sustainable industrial wastewater management	
H. Futselaar, R. Rosink, G. Smith and L. Koens (Eindhoven, The Netherlands).....	1070
Treatment of dyeing wastewater using submerged membrane bioreactor	
A.H. Konsowa, M.G. Ellofy and Y.A. El-Taweel (Alexandria, Egypt)	1079

SDI/MFT

Assessment of silt density index (SDI) as fouling propensity parameter in reverse osmosis (RO) desalination systems	
R.M. Rachman, N. Ghaffour, F. Wali and G.L. Amy (Thuwal, Saudi Arabia)	1091
Limitations, improvements and alternatives of the silt density index	
A. Alhadidi, B. Blankert, A.J.B. Kemperman (Eindhoven, The Netherlands), R. Schurer (Spijkenisse, The Netherlands), J.C. Schippers (Delft, The Netherlands), M. Wessling and W.G.J. van der Meer (Eindhoven, The Netherlands)	1104
SDI and MFI workshop: conclusions and recommendations	
J.C. Schippers, L. Broens and M. Balaban.....	1114

Brackish water desalination

Integrated Membrane System (IMS) to treat brackish water with high salinity: a new treatment concept	
J.F. Ruana (Tarragona, Spain), F.J. Bernaola, A.R. Frutos (Sevilla, Spain) and X. Pujol (Tarragona, Spain)	1116
Industrial and brackish water treatment with closed circuit reverse osmosis	
R.L. Stover (Newton, USA).....	1124
Desalination of brackish groundwater and concentrate disposal by deep well injection	
N. Wolthek (Lelystad, The Netherlands), K. Raat (Nieuwegein, The Netherlands), J.A. de Ruijter (Schiedam, The Netherlands), A. Kemperman (Leeuwarden, The Netherlands) and A. Oosterhof (Lelystad, The Netherlands).....	1131
Barcelona, three years of experience in brackish water desalination using EDR to improve quality.	
New O&M procedures to reduce low-value work and increase productivity	
F. Valero, A. Barceló, M.E. Medina and R. Arbós (Sant Joan Despí, Spain)	1137
Estimation of the maximum conversion level in reverse osmosis brackish water desalination plants	
E.R. Saavedra, A.G. Gotor, S.O. Pérez Báez and A.R. Martín (Las Palmas, Spain)	1143
Pioneering demineralized and desalinated water cost reduction with innovative brackish water RO membrane technology	
K. Majamaa (Tarragona, Spain), A. Roy, J. Johnson and M. Peery (Edina, USA).....	1151

Renewable energy/Freezing

Sustainable renewable energy seawater desalination using combined-cycle solar and geothermal heat sources	
T.M. Missimer, Y.-D. Kim, R. Rachman and K.C. Ng (Thuwal, Saudi Arabia)	1161
Renewable desalination: a methodology for cost comparison	
M. Moser, F. Trieb, T. Fichter and J. Kern (Stuttgart, Germany)	1171
Seawater reverse osmosis (SWRO) as deferrable load in micro grids	
K. Bognar (Fasanenstraße, Germany), R. Pohl (Berlin, Germany) and F. Behrendt (Fasanenstraße, Germany).....	1190

Freeze concentration for membrane concentrate treatment and volume reduction W. Gao (Canada)	1200
A multicriteria analysis for the optimal desalination–RES system. Special focus: the small Greek islands E. Kondili, J.K. Kaldellis and M. Paidousi (Athens, Greece)	1205
Wind desalination for the Island of Mykonos in Greece: a case study G. Xenarios (Athens, Greece), P. Papadopoulos and E. Tzen (Pikermi, Greece)	1219

Solar desalination

Parametric equations for the variables of a steady-state model of a multi-effect desalination plant P. Palenzuela, D. Alarcón, G. Zaragoza, J. Blanco and M. Ibarra (Almería, Spain)	1229
Numerical simulation of solar-assisted multi-effect distillation (SMED) desalination systems Y.-D. Kim, K. Thu (Thuwal, Saudi Arabia), A. Myat and K.C. Ng (Singapore)	1242
Design and testing of an isolated commercial EDR plant driven by solar photovoltaic energy B. Peñate (Santa Lucía, Spain), F. Círez (Zaragoza, Spain), F.J. Domínguez, V.J. Subiela and L. Vera (Santa Lucía, Spain)	1254
Distilled and drinkable water quality produced by solar membrane distillation technology J.R.B. Rodríguez, V.M. Gabet, G.M. Monroy (Santa Lucía, Spain), A.B. Puerta (Santa Cruz de Tenerife, Spain) and I.F. Barrio (Barcelona, Spain)	1265
Exergy analysis of a solar-assisted MED desalination experimental unit L. Yang, T. Shen, B. Zhang, S. Shen and K. Zhang (Dalian, China)	1272
DesaLink: solar powered desalination of brackish groundwater giving high output and high recovery T.Y. Qiu, O.N. Igobo and P.A. Davies (Birmingham, UK)	1279
Study of thermophysical properties of a solar desalination system using solar energy M. Boukhriss, K. Zhani and R. Ghribi (Sfax, Tunisia)	1290

Solar stills

Desalination and hot water production using solar still enhanced by external solar collector H. Mousa and M. Abu Arabi (Irbid, Jordan)	1296
Design and experimental analysis of low-cost heat water solar collectors E. Cardoso, S. Silva-Martinez, A. Alvarez and J.A. Hernández (Morelos, Mexico)	1302
Contributing to the improvement of the production of solar still H.B. Bacha (Alkharj, Saudi Arabia) and K. Zhani (Sfax, Tunisia)	1310
Novel multiple effect direct solar distillation system of integrated solar still and HDH system H. Fath, N. Jayswal and A. Qadir (Abu Dhabi, UAE)	1319
Author index to issues 4–6	1327
Author index to issues 1–9	1330