

WEST publication list (updated 07/24)

2024

Cechinel, M.A.P., Neves, J., Fuck, J.V.R., Campos de Andrade, R., Spogis, N., Riella, H.G., Padoin, N., Soares, C. (2024). Enhancing wastewater treatment efficiency through machine learning-driven effluent quality prediction: A plant-level analysis. *Journal of Water Process Engineering* 58, 104758. ([link](#))

Checa-Fernández, A., Ruiz, L.M., Torre-Marín, J.M., Muñoz-Ubina, A., Pérez, J.I., Gómez, M.A.. Direct application of chemically enhanced primary treatment in a municipal wastewater treatment plant: A case study. *Chemical Engineering Research and Design* 204, 183–192. ([link](#))

Daneshgar, S., Borzooei, S., Debliek, L., Van Den Broeck, E., Cornelissen, R., de Langhe, P., Piacuzzi, C., Daza, M., Duchi, S., Rehman, U., Nopens, I., Torfs, E. (2024). A dynamic compartmental model of a sequencing batch reactor (SBR) for biological phosphorus removal. *Water Science & Technology* wst2024231. ([link](#)).

Daneshgar, S., Amerlinck, Y., Amaral, A., De Mulder, C., Di Nisio, A., Bellandi, G., Gopri, R., Caretti, C., Ducci, I., Rehman, U., Porro, J., Nopens, I., Torfs, E. (2024). An innovative model-based protocol for minimisation of greenhouse gas (GHG) emissions in WRRFs. *Chemical Engineering Journal* 483, 148327. ([link](#))

Daneshgar, S., Polesel, F., Borzooei, S., Sørensen, H.R., Peeters, R., Weijers, S., Nopens, I. Torfs, E., (2024). A full-scale operational digital twin for a water resource recovery facility—A case study of Eindhoven Water Resource Recovery Facility. *Water Environment Research* 96(3), e11016. ([link](#))

Devos, P., Elduayen-Echave, B., Filali, A., Gillot, S., Grau, P. (2024). Calibration of a sewage sludge anaerobic digestion model with multiple mineral precipitation for two case studies. *Journal of Water Process Engineering* 60, 105227. ([link](#))

Fuck, J.V.R., Cechinel, M.A.P., Neves, J., Campos de Andrade, R., Tristão, R., Spogis, N., Riella, H.G., Soares, C., Padoin, N. (2024). Predicting effluent quality parameters for wastewater treatment plant: A machine learning-based methodology. *Chemosphere* 352, 141472. ([link](#))

Ianes, J., Cantoni, B., Scana, F., Delli Compagni, R., Polesel, F., Remigi, E.U., Vezaro, L., Antonelli, M. (2024). Implications of the transition towards water-wise approaches in urban areas: Elucidating the risk from micropollutants release. *Journal of Environmental Chemical Engineering* 12(3), 112676. ([link](#))

Lancioni, N., Szelag, B., Sgroi, M., Barbusinski, K., Fatone, F., Eusebi, A.L. (2024). Novel extended hybrid tool for real time control and practically support decisions to reduce GHG emissions in full scale wastewater treatment plants. *Journal of Environmental Management* 365, 121502. ([link](#))

Lumley, D.J., Polesel, F., Sørensen, H.R., Gustafsson, L-G. (2024). Connecting digital twins to control collections systems and water resource recovery facilities: From siloed to integrated urban (waste)water management. *Water Practice & Technology* 19(6), 2267–2278. ([link](#))

Reza, A.F., Singh, R., Verma, R.K., Singh, A., Ahn, Y.H., Ray, S.S. (2024). An integral and multidimensional review on multi-layer perceptron as an emerging tool in the field of water treatment and desalination processes ([link](#))

Romay, A., Elduayen, B., Hernández, B., Sánchez, G., Arnau, R., Climent, J., Ayesa, E. (2024). A CFD-based compartmental modelling approach for long-term dynamic simulation of water resource recovery facilities. *Water Science & Technology* wst2024230. ([link](#))

Ruiz, L.M., Checa, A., Perez, J.I., Torre-Marín, J.M., Muñoz-Ubina, A., Gómez, M.A. (2024). Effect of FeCl₃ concentration in chemically enhanced primary treatment on the performance of a conventional wastewater treatment plant. A case study. *Journal of Environmental Science and Health, Part A*, 59(1), 33–39. ([link](#))

2023

Beilicci, E., Beilicci, R., Stefanescu, C. (2023). Treatment of Wastewaters from Livestock Farms. *Animal Science and Biotechnologies*, 56 (1), 62–71. ([link](#))

Chrysochoidis, V., Andersen, M.H., Remigi, E.U., Faragó, M., Smets, B.F., Domingo-Félez, C., Valverde-Perez, B. (2023). Critical evaluation of different mass transfer equations to model N₂O emissions from water resource recovery facilities with diffuse aeration. *Environmental Technology*, DOI: 10.1080/09593330.2023.2215454. ([link](#))

Gabrielli, M., Delli Compagni, R., Gusmaroli, L., Malpei, F., Polesel, F., Buttiglieri, G., Antonelli, M., Turolla, A. (2023). Modelling and prediction of the effect of operational parameters on the fate of contaminants of emerging concern in WWTPs. *Science of the Total Environment* 856(2), 159200. ([link](#))

Maere, T., Boisvert, C., Mendoza Grubert, D.A., Vanrolleghem, P.A. (2023). Assessing the equivalence of WRRF regulations using dynamic model simulations. *Water Science & Technology* wst2023271. ([link](#))

Mei, P., Wang, Z., Guo, W., Gao, Y., Vanrolleghem, P.A., Li, Y. (2023). The ASM2d model with two-step nitrification can better simulate biological nutrient removal systems enriched with complete ammonia oxidizing bacteria (comammox Nitrospira). *Chemosphere* 335, 139169. ([link](#))

Ossiansson, E., Bengtsson, S., Persson, F., Cimbritz, M., Gustavsson, D.J.I. (2023). Primary filtration of municipal wastewater with sludge fermentation – Impacts on biological nutrient removal. *Science of the Total Environment* 902, 166483. ([link](#))

Wang, J.H., Zhao, D.J., Liao, W.S., Mahmoud, M.S., Guo, Z.W., Li, H.M., Gao, X., Feng, D., Shi, L.F., Chen, Y.P., Shen, Y. (2023). An online intelligent management method for wastewater treatment supported by coupling data-driven and mechanism models. *Journal of Water Process Engineering* 53, 103653. ([link](#))

2022

Brouckaert, B., Brouckaert, C., Singh, A., Pillay, K., Flores-Alsina, X., Ikumi, D. (2022). Using plant data to estimate biodegradable COD fractions – case study kwaMashu WWTP. *Water Science & Technology* 86 (9), 2045–2058. ([link](#))

Kirim, G., Torfs, E., Vanrolleghem, P.A. (2022). An improved 1D reactive Bürger–Diehl settler model for secondary settling tank denitrification. *Water Environment Research* 94(12), e10825. ([link](#))

Remigi, E.U., Polesel, F., Flauto, M., Spinelli, L., Di Cosmo, R., Muzzatti, M. (2022). Practical Application Of A Model-Based Digital Twin For Monitoring and Scenario Analysis Of A Water Resource Recovery Facility. *Proceedings of the Water Environment Federation*, DOI: 10.2175/193864718825158729. ([link](#))

2021

Brouckaert, C.J., Ekama, G.A., Brouckaert, B.M., Ikumi, D.S. (2021). Integration of complete elemental mass-balanced stoichiometry and aqueous-phase chemistry for bioprocess modelling of liquid and solid waste treatment systems – Part 2: Bioprocess stoichiometry. *Water SA* 47(3), 289–308. ([link](#))

Elduayen-Echave, B., Lizarralde, I., Schneider, P.A., Ayesa, E., Larraona, G.S., Grau, P. (2021). Inclusion of shear rate effects in the kinetics of a discretized population balance model: Application to struvite precipitation. *Water Research* 200, 117242. ([link](#))

Matesun, J., Mazivila, C., Ikumi, D.S. (2021). The development of a calibration methodology for a realistic primary settling tank (PST) model. *Journal of Water Process Engineering* 40, 101936. ([link](#))

Polorigni, C.L., Ikumi, D.S., Ekama, G.A. (2021). Primary sedimentation modelling with characterized settling velocity groups. *Water Research* 189, 116621. ([link](#))

2020

Clouzot, L., Haguenaer, C., Vanrolleghem P.A. (2020). An Extended Ecosystem Model for Understanding EE2 Indirect Effects on a Freshwater Food Web and Its Ecosystem Function Resilience. *Water* 12, 1736. ([link](#))

Delli Compagni, R., Gabrielli, M., Polesel, F., Turolla, A., Trapp, S., Vezzaro, L., Antonelli, M. (2020). Risk assessment of contaminants of emerging concern in the context of wastewater reuse for irrigation: An integrated modelling approach. *Chemosphere* 242, 125185. ([link](#))

Delli Compagni, R., Polesel, F., von Borries, K.J.F., Zhang, Z., Turolla, A., Antonelli, M., Vezzaro, L. (2020). Modelling the fate of micropollutants in integrated urban wastewater systems: Extending the applicability to pharmaceuticals. *Water Research* 184, 116097. ([link](#))

Elduayen-Echave, B., Azcona, M., Grau, P., Schneider, P.A. (2020). Effect of the shear rate and supersaturation on the nucleation and growth of struvite in batch stirred tank reactors. *Journal of Water Process Engineering* 38, 101657. ([link](#))

Ikumi, D.S. (2020). Sensitivity analysis on a three-phase plant-wide water and resource recovery facility model for identification of significant parameters. *Water SA* 46(3), 476–492. ([link](#))

Moreno-Rodenas, A.M., Langeveld, J.G., Clemens, F.H.L.R. (2020). Parametric emulation and inference in computationally expensive integrated urban water quality simulators. *Environmental Science and Pollution Research* 27, 14237–14258. ([link](#))

Tobo, Y.M., Bartacek, J., Nopens, I. (2020). Linking CFD and Kinetic Models in Anaerobic Digestion Using a Compartmental Model Approach. *Processes* 8, 703. ([link](#))

2019

Bakos, V., Deak, A., Jobbágy, A. (2019). Reconsideration and upgrading of sampling and analysis methods for avoiding measurement-related design and operation failures in wastewater treatment. *Water SA* 45, 329–337. ([link](#))

Delli Compagni, R., Polesel, F., von Borries, K.J.F., Zhang, Z., Turolla, A., Antonelli, M., Vezzaro, L. (2019). Modelling micropollutant fate in sewer systems – A new systematic approach to support conceptual model construction based on in-sewer hydraulic retention time. *Journal of Environmental Management* 246, 141–149. ([link](#))

Elduayen-Echave, B., Lizarralde, I., Larraona, G.S., Ayesa, E., Grau, P. (2021). A New Mass-Based Discretized Population Balance Model for Precipitation Processes: Application to Struvite Precipitation. *Water Research* 155, 26–41. ([link](#))

Ledergerber, J.M., Maruéjols, T., Vanrolleghem P.A. (2019). Optimal experimental design for calibration of a new sewer water quality model. *Journal of Hydrology* 574, 1020–1028. ([link](#))

Ledergerber, J.M., Pieper, L., Binet, G., Comeau, A., Maruéjols, T., Muschalla, D., Vanrolleghem P.A. (2019). An efficient and structured procedure to develop conceptual catchment and sewer models from their detailed counterparts. *Water* 11, 2000. ([link](#))

Lizarralde, I., Fernández-Arévalo, T., Manas, A., Ayesa, E., Grau, P. (2019). Model-based optimization of phosphorus management strategies in Sur WWTP, Madrid. *Water Research* 153, 39–52. ([link](#))

Moreno-Rodenas, A.M., Tscheikner-Gratl, F., Langeveld, J.G., Clemens, F.H.L.R. (2019). Uncertainty analysis in a large-scale water quality integrated catchment modelling study. *Water Research* 158, 46–60. ([link](#))

Muoio, R., Palli, L., Ducci, I., Coppini, E., Bettazzi, E., Daddi, D., Fibbi, D., Gori, R. (2019). Optimization of a large industrial wastewater treatment plant using a modeling approach: A case study. *Journal of Environmental Management* 249, 109436. ([link](#))

Patry, B., Lessard, P., Vanrolleghem, P.A. (2019). Nitrification in a biofilm-enhanced highly loaded aerated lagoon. *Water Environment Research* 93, 16–23. ([link](#))

Vandekerckhove, T.G.L., Bodé, S., De Mulder, C., Vlaeminck, S.E., Boon, N. (2019). ^{13}C Incorporation as a Tool to Estimate Biomass Yields in Thermophilic and Mesophilic Nitrifying Communities. *Frontiers in Microbiology* 10, 192. ([link](#))

2018

De Ketele, J., Davister, D. Ikumi, D.S. (2018). Applying performance indices in plantwide modelling for a comparative study of wastewater treatment plant operational strategies. *Water SA* 44(4), 539–550. ([link](#))

Lizarralde, I., Fernández-Arévalo, T., Beltrán, S., Ayesa, E., Grau, P. (2018). Validation of a multi-phase plant-wide model for the description of the aeration process in a WWTP. *Water Research* 129, 305–318. ([link](#))

Sanchez, F., Rey, H., Viedma, A., Nicolas-Perez, F., Kaiser, A.S., Martínez, M. (2018). CFD simulation of fluid dynamic and biokinetic processes within activated sludge reactors under intermittent aeration regime. *Water Research* 139, 47–57. ([link](#))

Vaneckhaute, C., Claeys, F., Tack, F.M.G., Meers, E., Belia, E., Vanrolleghem, P.A. (2018). Development, implementation, and validation of a generic nutrient recovery model (NRM) library. *Environmental Modelling & Software* 99, 170–209. ([link](#))

Vaneckhaute, C., Remigi, E., Tack, F.M.G., Meers, E., Belia, E., Vanrolleghem, P.A. (2018). Optimizing the configuration of integrated nutrient and energy recovery treatment trains: A new application of global sensitivity analysis to the generic nutrient recovery model (NRM) library. *Bioresource Technology* 269, 375–383. ([link](#))

2017

Baalbaki, Z., Torfs, E., Maere, T., Yargeau, V., Vanrolleghem, P.A. (2017). Dynamic modelling of solids in a full-scale activated sludge plant preceded by CEPT as a preliminary step for micropollutant removal modelling. *Bioprocess and Biosystems Engineering* 40, 499–510. ([link](#))

Baalbaki, Z., Torfs, E., Yargeau, V., Vanrolleghem P.A. (2017). Predicting the fate of micropollutants during wastewater treatment: Calibration and sensitivity analysis. *Science of the Total Environment* 601–602, 874–885. ([link](#))

Baalbaki, Z., Sultana, T., Metcalfe, C., Yargeau, V. (2017). Estimating removals of contaminants of emerging concern from wastewater treatment plants: The critical role of wastewater hydrodynamics. *Chemosphere* 178, 439–448. ([link](#))

Fernández-Arévalo, T., Lizarralde, I., Maiza, M., Beltrán, S., Grau, P., Ayesa, E. (2017). Diagnosis and optimization of WWTPs using the PWM library: full-scale experiences. *Water Science & Technology* 75(3), 518–529. ([link](#))

Moreno-Rodenas, A., Bellos, V., Langeveld, J., Clemens F. (2017). Influence of river routing methods on integrated catchment water quality modelling. *European Water* 57, 267–272. ([link](#))

Moreno-Rodenas, A., Cecinati, F., Langeveld, J., Clemens, F.H.L.R. (2017). Impact of Spatiotemporal Characteristics of Rainfall Inputs on Integrated Catchment Dissolved Oxygen Simulations. *Water* 9, 926. ([link](#))

Tik, S., Vanrolleghem, P.A. (2017). Chemically enhancing primary clarifiers: model-based development of a dosing controller and full-scale implementation. *Water Science & Technology* 75(5), 1185–1193. ([link](#))

2016

Amerlinck, Y., Bellandi, G., Amaral, A., Weijers, S., Nopens, I. (2016). Detailed off-gas measurements for improved modelling of the aeration performance at the WWTP of Eindhoven. *Water Science & Technology* 74(1), 203–211. ([link](#))

Baalbaki, Z., Sultana, T., Maere, T., Vanrolleghem, P.A., Metcalfe, C.D., Yargeau, V. (2016). Fate and mass balance of contaminants of emerging concern during wastewater treatment determined using the fractionated approach. *Science of the Total Environment* 573, 1147–1158. ([link](#))

Lindblom, E., Arnell, M., Flores-Alsina, X., Stenström, F., Gustavsson, D.J.I., Yang, J., Jeppsson, U. (2016). Dynamic modelling of nitrous oxide emissions from three Swedish sludge liquor treatment systems. *Water Science & Technology* 73(4), 798–806. ([link](#))

Murla, D., Gutierrez, O., Martinez, M., Suñer, D., Malgrat, P., Poch, M. (2016). Coordinated management of combined sewer overflows by means of environmental decision support systems. *Science of the Total Environment* 550, 256–264. ([link](#))

Polesel, F., Andersen, H.R., Trapp, S., Plósz, B.G. (2016). Removal of Antibiotics in Biological Wastewater Treatment Systems – A Critical Assessment Using the Activated Sludge Modeling Framework for Xenobiotics (ASM-X). *Environmental Science & Technology* 50, 10316–10334. ([link](#))

Spérandio, M., Pocquet, M., Guo, L., Ni, B.J., Vanrolleghem, P.A., Yuan, Z. (2016). Evaluation of different nitrous oxide production models with four continuous long-term wastewater treatment process data series. *Bioprocess and Biosystems Engineering* 39, 493–510. ([link](#))

Wu, X., Yang, Y., Wu, G., Mao, J., Zhou, T. (2016). Simulation and optimization of a coking wastewater biological treatment process by activated sludge models (ASM). *Journal of Environmental Management* 165, 235–242. ([link](#))

2015

Bachis, G., Maruéjols, T., Tik, S., Amerlinck, Y., Melcer, H., Nopens, I., Lessard, P., Vanrolleghem P.A. (2015). Modelling and characterization of primary settlers in view of whole plant and resource recovery modelling. *Water Science & Technology* 72(12), 2251–2261. ([link](#))

Kim, D., Bowen, J.D., Ozelkan, E.C. (2015). Optimization of wastewater treatment plant operation for greenhouse gas mitigation. *Journal of Environmental Management* 163, 39–48. ([link](#))

Polesel, F., Lehnberg, K., Dott, W., Trapp, S., Thomas, K.V., Plósz, B.G. (2015). Factors influencing sorption of ciprofloxacin onto activated sludge: Experimental assessment and modelling implications. *Chemosphere* 119, 105–111. ([link](#))

Ruiz, L.M., Rodelas, P., Pérez, J.I., Gómez, M.A. (2015). Sensitivity analyses and simulations of a full-scale experimental membrane bioreactor system using the activated sludge model No. 3 (ASM3). *Journal of Environmental Science and Health Part A* 50(3), 317–324. ([link](#))

Wang, R., Li, Y., Wang, W., Chen, Y., Vanrolleghem, P.A. (2015). Effect of high orthophosphate concentration on mesophilic anaerobic sludge digestion and its modeling. *Chemical Engineering Journal* 260, 791–800. ([link](#))

2014

Flores-Alsina, X., Arnell, M., Amerlinck, Y., Corominas, L., Gernaey, K.V., Guo, L., Lindblom, E., Nopens, I., Porro, J., Shaw, A. et al. (2014). Balancing effluent quality, economic cost and greenhouse gas emissions during the evaluation of (plant-wide) control/operational strategies in WWTPs. *Science of the Total Environment* 466-467, 616-624.

Guo L. and Vanrolleghem P.A. (2014) Calibration and validation of an Activated Sludge Model for Greenhouse gases no. 1 (ASMG1): Prediction of temperature-dependent N₂O emission dynamics. *Bioprocess and Biosystems Engineering* 37, 151-163. ([link](#))

Jimenez, J., Gonidec, E., Cacho Rivero, J.A., Latrille, E., Vedrenne, F., Steyer, J.P. (2014). Prediction of anaerobic biodegradability and bioaccessibility of municipal sludge by coupling sequential extractions with fluorescence spectroscopy: Towards ADM1 variables characterization. *Water Research* 50, 359–372. ([link](#))

Vezzaro, L., Benedetti, L., Gevaert, V., De Keyser, W., Verdonck, F., De Baets, B., Nopens, I., Cloutier, F., Vanrolleghem, P.A., Mikkelsen P.S. (2014). A model library for dynamic transport and fate of micropollutants in integrated urban wastewater systems. *Environmental Modelling & Software* 53, 98-111. ([link](#))

Van Hulle, S.W.H., Vesvikar, M., Poutiainen, H., Nopens, I. (2014). Importance of scale and hydrodynamics for modeling anaerobic digester performance. *Chemical Engineering Journal* 255, 71–77. ([link](#))

Morras, M., Larrea, L., García-Heras, J.L. (2014). Model based operational guidelines of a bioprocess for biological nitrogen removal and complete stabilisation of anaerobically digested sewage sludge. *Bioprocess and Biosystems Engineering* 37(7), 1345–1352. ([link](#))

Ruiz, L.M., Pérez, J.I., Gómez, M.A. (2014). Comparison of five wastewater COD fractionation methods for dynamic simulation of MBR systems. *Journal of Environmental Science and Health Part A* 49(13), 1553–1563. ([link](#))

2013

Astals, S., Esteban-Gutiérrez, M., Fernández-Arévalo, T., Aymerich, E., García-Heras, J.L., Mata-Alvarez, J. (2013). Anaerobic digestion of seven different sewage sludges: a biodegradability and modelling study. *Water Research* 47 (16), 6033-6043. ([link](#))

Audenaert, W., Vandierendonck, D., Van Hulle, S., Nopens, I. (2013). Comparison of ozone and HO[•] induced conversion of effluent organic matter (EfOM) using ozonation and UV/H₂O₂ treatment. *Water Research* 47, 2387-2398. ([link](#))

Audenaert W, Vandeveld M, Van Hulle S, Nopens I. (2013). Impact of Dissolved Organic Matter (DOM) on parameter sensitivity of a kinetic ozone decomposition model. *Ozone: Science & Engineering* 35, 338–349. ([link](#))

Benedetti, L., Langeveld, J., Van Nieuwenhuijzen, A.F., de Jonge, J., De Klein, J., Flameling, T., Nopens, I., Van Zanten, O., Weijers, S. (2013). Cost-effective solutions for water quality improvement in the Dommel River supported by sewer-WWTP-river integrated modelling. *Water Science & Technology* 68(5), 965-973. ([link](#))

Benedetti, L., Langeveld, J., Comeau, A., Corominas, L., Daigger, G., Martin, C., Mikkelsen, P.S., Vezzaro, L., Weijers, S., Vanrolleghem P.A. (2013). Modelling and monitoring of integrated urban wastewater systems: review on status and perspectives. *Water Science & Technology* 68(6), 1203–1215. ([link](#))

Decostere, B., Janssens, N., Alvarado, A., Maere, T., Goethals, P., Van Hulle, S.W.H., Nopens, I. (2013). A combined respirometer-titrimeter for the determination of microalgae kinetics: Experimental data collection and modelling. *Chemical Engineering Journal* 222, 85-93. ([link](#))

Maiza, M., Bengoechea, A., Grau, W., De Keyser, W., Nopens, I., Brockmann, D., Steyer, J.P., Claeys, F., Urchegui, G., Fernandez, O. et al. (2013). Add Control: plant virtualization for control solutions in WWTP. *Water Science & Technology* 68(2), 296–302. ([link](#))

Plósz, B.G., Reid, M.J., Borup, M., Langford, K.H., Thomas, K.V. (2013). Biotransformation kinetics and sorption of cocaine and its metabolites and the factors influencing their estimation in wastewater. *Water Research* 47, 2129–2140. ([link](#))

Vallet, B., Muschalla, D., Lessard, P., Vanrolleghem, P.A. (2013). A new dynamic water quality model for stormwater basins as a tool for urban runoff management: Concept and validation. *Urban Water Journal* 11(3), 211-220. ([link](#))

2012

Alvarado, A., Vedantam, S., Goethals, P., Nopens, I. (2012). A compartmental model to describe hydraulics in a full-scale waste stabilization pond. *Water Research* 46, 521–530. ([link](#))

Plósz, B.G., Langford, K.H., Thomas, K.V. (2012). An activated sludge modeling framework for xenobiotic trace chemicals (ASM-X): Assessment of diclofenac and carbamazepine. *Biotechnology and Bioengineering* 109(11), 2757–2769. ([link](#))

Vergeynst, L., Vallet, B., Vanrolleghem, P.A. (2012). Modelling pathogen fate in stormwaters by a particle-pathogen interaction model using population balances. *Water Science & Technology* 65(5), 823–832. ([link](#))