

WEST publication list (updated 12/24)

2024

Angula, S.T., Okedi, S.T., Harding, T., Bellandi, G., Ikumi, D.S. (2024). Hybrid modelling framework for ozonation and biological activated carbon in tertiary wastewater treatment. *Water Science & Technology* 90, 3052–3075. ([link](#))

Cavalcanti Albuquerque Mendes, F., Maruéjols, T., Pierre, F., Valentin, C. (2024). Modelling an urban wastewater system via a space–time multivariate calibration to understand and improve water bodies quality. *Water Science & Technology* 90, 1433–1450. ([link](#))

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](#))

Deghani Tafti, A., Houweling, D., Perron, J.M., Bencsik, D., Johnson, T., Vanrolleghem, P.A., Comeau, Y. (2024). Towards a modelling framework for nature-based solutions in wastewater treatment. *Water Science & Technology* 90, 758–776. ([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](#))

lanes, J., Cantoni, B., Scana, F., Delli Compagni, R., Polesel, F., Remigi, E.U., Vezzano, 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](#))

Lopez, A., Gomez, J., Aguilar, V., Astals, S., Chimenos, J.M., Olaciregui-Arizmendi, K., Elduayen-Echave, B., Ayesa, E., Guembe, M., Garcia, I. (2024). Recovery of Phosphorus Using a Low-Grade Magnesium Oxide (Industrial By-Product) as an Alternative Magnesium Source. The MAGNYFOS Project. In: Mannina, G., Cosenza, A., Mineo, A. (eds) *Resource Recovery from Wastewater Treatment. ICWRR 2024. Lecture Notes in Civil Engineering*, vol 524. Springer, Cham. ([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](#))

Serrao, M., Jauzein, V., Juran, I., Tassin, B., Vanrolleghem, P. (2024). Hybrid modelling of nitrogen removal by biofiltration using high-frequent operational data. *Water Science & Technology* 90, 1416–1432. ([link](#))

Verhaeghe, L., Verwaeren, J., Kirim, G., Daneshgar, S., Vanrolleghem, P.A., Torfs, E. (2024). Towards good modelling practice for parallel hybrid models for wastewater treatment processes. *Water Science & Technology* 89, 2971–2990. ([link](#))

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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](#))

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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](#))

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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](#))

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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., Vezzano, 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., Vezzano, 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](#))

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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](#))

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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., Vezzano, 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](#))

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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](#))

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Vaneekhaute, 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](#))

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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.

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