

Accepted Manuscript

Title: Model-based energy and uncertainty analysis of membrane bioreactor to treat PVC production site wastewater

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PII: S1369-703X(17)30267-X
DOI: <https://doi.org/10.1016/j.bej.2017.10.015>
Reference: BEJ 6809

To appear in: *Biochemical Engineering Journal*

Received date: 14-4-2017
Revised date: 17-10-2017
Accepted date: 23-10-2017

Please cite this article as: Kang Hu, Thorsten Fiedler, Laura Blanco, Sven-Uwe Geissen, David Prieto, Angeles Blanco, Carlos Negro, Nathalie Swinnen, Model-based energy and uncertainty analysis of membrane bioreactor to treat PVC production site wastewater, *Biochemical Engineering Journal* <https://doi.org/10.1016/j.bej.2017.10.015>

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Model-based energy and uncertainty analysis of membrane bioreactor to treat PVC production site wastewater

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Highlights:

- ASM1 was calibrated and validated for a MBR to treat PVC production wastewater.
- The calibrated ASM1 can reasonably simulate MBR in steady and dynamic states.
- A modified aeration energy model incorporating MLSS concentration was proposed.
- Latin Hypercube Sampling was applied to judge the reliability of operation strategy.
- The current operation can ensure the effluent $\text{NH}_4\text{-N}$ below 2 mg L^{-1} for 97 % chance.

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