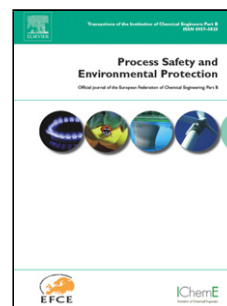


Accepted Manuscript

Title: Hybrid forward osmosis-reverse osmosis for wastewater reuse and seawater desalination: Understanding the optimal feed solution to minimise fouling

Authors: Federico Volpin, Emilie Fons, Laura Chekli, Jung Eun Kim, Am Jang, Ho Kyong Shon



PII: S0957-5820(18)30158-7
DOI: <https://doi.org/10.1016/j.psep.2018.05.006>
Reference: PSEP 1377

To appear in: *Process Safety and Environment Protection*

Received date: 22-3-2018
Revised date: 4-5-2018
Accepted date: 8-5-2018

Please cite this article as: Volpin, Federico, Fons, Emilie, Chekli, Laura, Kim, Jung Eun, Jang, Am, Shon, Ho Kyong, Hybrid forward osmosis-reverse osmosis for wastewater reuse and seawater desalination: Understanding the optimal feed solution to minimise fouling. *Process Safety and Environment Protection* <https://doi.org/10.1016/j.psep.2018.05.006>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Hybrid forward osmosis-reverse osmosis for wastewater reuse and seawater desalination: Understanding the optimal feed solution to minimise fouling

Federico Volpin^{1,*}, Emilie Fons^{1,*}, Laura Chekli¹, Jung Eun Kim¹, Am Jang² and Ho Kyong Shon^{1,**}

¹ School of Civil and Environmental Engineering, University of Technology Sydney (UTS), City Campus, Broadway, NSW 2007, Australia

² Graduate School of Water Resources, Sungkyunkwan University, Jangan-gu, Suwon, Gyeonggi-do, 16419, Republic of Korea

* F.V. and E.F. equally contributed to this work

** Corresponding author: Tel.: (+61) 02 9514 2629; email: Hokyong.Shon-1@uts.edu.au

Research highlights

- Commercial state-of-the-art FO membranes were tested with real wastewater and seawater;
- Initial water flux of $22.5 \text{ Lm}^{-2}\text{h}^{-1}$ was observed;
- Secondary effluent wastewater caused negligible fouling over long term operation;
- Ammonia leakage to the seawater was negligible;

Abstract

To enhance the seawater desalination energy efficiency forward osmosis – reverse osmosis (FO-RO) hybrid system has recently been developed. In this process, the FO “pre-treatment” step is designed to dilute the seawater (SW) with reclaimed wastewater (WW) before the desalination step, thereby reducing the energy demand for the SWRO process. However, membrane fouling is a major issue that

Download English Version:

<https://daneshyari.com/en/article/6974000>

Download Persian Version:

<https://daneshyari.com/article/6974000>

[Daneshyari.com](https://daneshyari.com)