

## AirLift MBR for municipal wastewater treatment: out of the box performance

Harry Futselaar<sup>a\*</sup>, Rob Borgerink<sup>a</sup>, Henk Schonewille<sup>b</sup>, Rick Rosberg<sup>c</sup>

<sup>a</sup>Norit Process Technology B.V., P.O. 741, 7500 AS Enschede, The Netherlands  
Tel. +31 53 428 7000; Fax: +31 53 428 7001; email: h.futselaar@noritpt.nl

<sup>b</sup>Norit Membrane Technology B.V., P.O. 731, 7500 AS Enschede, The Netherlands  
email: h.schonewille@noritmt.nl

<sup>c</sup>Norit X-Flow B.V., P.O. 739, 7500 AS Enschede, The Netherlands  
email: rosberg@xflow.nl

Received 28 September 2008; Accepted 8 March 2009

---

### ABSTRACT

In recent years, Norit has developed and proven a totally new concept for treating domestic wastewater. The concept applies the side-stream AirLift principle using the robust and reliable side-stream cross-flow concept while incorporating all the advantages of the low energy consuming submerged systems. Based on this 'outside the box thinking', a new membrane bioreactor (MBR) concept was developed offering the solution, which is fully beneficial to the potential of ultrafiltration (UF) membranes. The biological box can be designed and operated optimally, while the UF installation can be handled as a separate unit, performing cleanly, safely and efficiently, while producing bacteria and virus-free water for recycling or ecological discharge. Recently, the first full-scale installations have been commissioned successfully, while currently larger installations are under construction and will be commissioned soon. This article presents the development of the AirLift MBR concept from the proof of concept till commercial installations.

**Keywords:** Wastewater treatment; Membrane bioreactor; Ultrafiltration; Side-stream; Airlift; Cross-flow

---

\* Corresponding author.

Presented at EuroMed 2008, Desalination for Clean Water and Energy Cooperation among Mediterranean Countries of Europe and the MENA Region, 9–13 November 2008, King Hussein Bin Talal Convention Center, Dead Sea, Jordan.