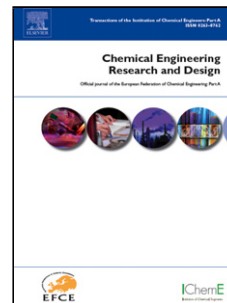


Accepted Manuscript

Title: Effects of operational models (batch, continuous and CFID modes) on the performance of a single A2O airlift bioreactor for treatment of milk processing wastewater

Authors: Azar Asadi, Ali Akbar Zinatizadeh, Mark van Loosdrecht



PII: S0263-8762(17)30416-1
DOI: <http://dx.doi.org/doi:10.1016/j.cherd.2017.08.004>
Reference: CHERD 2779

To appear in:

Received date: 1-2-2017
Revised date: 27-6-2017
Accepted date: 4-8-2017

Please cite this article as: Asadi, Azar, Zinatizadeh, Ali Akbar, Loosdrecht, Mark van, Effects of operational models (batch, continuous and CFID modes) on the performance of a single A2O airlift bioreactor for treatment of milk processing wastewater. *Chemical Engineering Research and Design* <http://dx.doi.org/10.1016/j.cherd.2017.08.004>

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.

Effects of operational models (batch, continuous and CFID modes) on the performance of a single A2O airlift bioreactor for treatment of milk processing wastewater

Azar Asadi¹, Ali Akbar Zinatizadeh^{1*}, Mark van Loosdrecht²

¹Environmental Research Center, Department of Applied Chemistry, Faculty of Chemistry, Razi University, Kermanshah, Iran

Email: zinatizadeh@gmail.com, zinatizadeh@razi.ac.ir

²Department of Biotechnology, Delft University of Technology, Julianalaan 67, 2628 BC Delft, the Netherlands

Highlights:

- The effect of operational models on CNP removal of ALR was investigated
- The performance of ALR and STR for CNP removal was compared
- The effect of inlet positions on the performance of CFID-ALR was assessed.
- PCR test to detect Candidate Accumulibactor was performed.

Abstract

This study surveys the effect of different operational models, batch, continuous, and continuous feeding with intermittent discharge (CFID), on the performance of an air lift reactor (ALR) and a stirred tank reactor (STR) in terms of simultaneous removal of CNP from milk processing wastewater. The experimental data were recorded under similar operating conditions with HRT of 10 h, air flow rate of 2 l/min, and biomass concentration of 5-6 g/l. The obtained results indicated that the CFID mode was a promising regime which ensured the occurrence of anaerobic, anoxic, and aerobic conditions in the air lift bioreactor. This gave favorable conditions for simultaneous COD and nutrient removal processes in one compartment. At the optimum condition obtained, 170 mg/l (79 %) of total nitrogen (TN) and 25 mg/l (63 %) phosphorus (TP) were removed in the CFID-ALR, while, batch and continuous operational conditions did not create anaerobic and

Download English Version:

<https://daneshyari.com/en/article/4987097>

Download Persian Version:

<https://daneshyari.com/article/4987097>

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