

Author's Accepted Manuscript

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PII: S0009-2509(13)00638-6
DOI: <http://dx.doi.org/10.1016/j.ces.2013.09.025>
Reference: CES11306

To appear in: *Chemical Engineering Science*

Received date: 23 April 2013
Revised date: 5 September 2013
Accepted date: 16 September 2013

Cite this article as: Astrid Bornhöft, Richard Hanke-Rauschenbach, Kai Sundmacher, Reactor configurations for biogas plants – a model based analysis, *Chemical Engineering Science*, <http://dx.doi.org/10.1016/j.ces.2013.09.025>

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Reactor configurations for biogas plants – A model based analysis

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Abstract

There are several different reactor configurations to improve the efficiency of biogas plants. The comparison and assessment of these are usually based on experimental observations. There, the substrate and the microbial community are in general not well characterized and differ in the different analyses in literature. That is why the results are not direct comparable or even lead to contradicting conclusions. In the present analysis, the different reactor configurations are compared on a common basis with defined conditions and composition by using simulations of a well established mathematical model. The configurations are grouped with respect to their working principles, namely spatial and temporal distribution as well as increase of the solid retention time.

It was found that reactors with temporal as well as spatial distribution have a higher methane yield than a continuous stirred tank reactor. But the maximal possible space-time yield is lower. Reactors with an increased solid

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