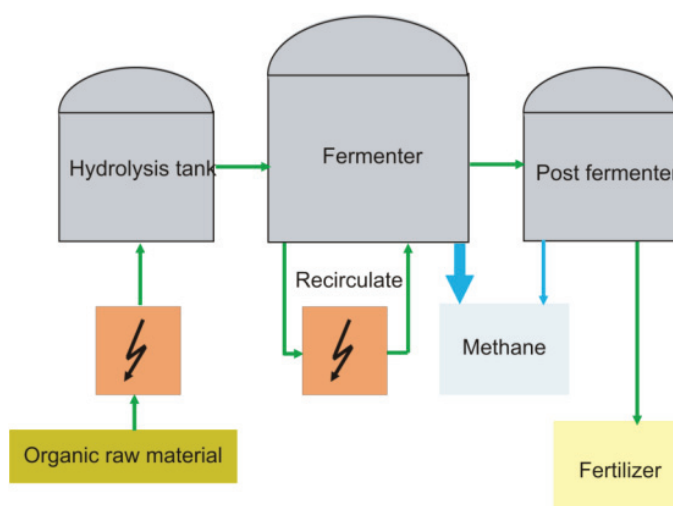


PRESS RELEASE

Perspectives on using pulse electric field to enhance biogas yield in anaerobic digestion

July 2, 2015 – The usage of pulsed electric field for conditioning substrates can significantly enhance biogas yield in commercial biogas plants. Although the primary effect of the electric field is cracking cell structures for better availability of nutrition, other effects like shockwave, electrophoresis or influence on the metabolic condition of cells can play a role. The aim of this review is the presentation of possible effects and a judgement in terms of economic factors like biogas yield and hydraulic retention time.



Possible arrangement of electric treatment within the biogas process: High pulse energies are for raw substrate treatment yielding a high level of cell killing and disintegration while moderate pulse protocols are used for recirculate where the focus lies on the control of the microbial community.

The technology was developed for treatment of food in the 50ties of last century and adapted for the treatment of waste water (OpenCeL, Atlante, CA; Innovum, Höchst, Austria). Lab scale studies but also experiments in production plants showed a significant enhancement of biogas yield for electrically treated substrate like manure or maize silage. Due to the very complex biogas process, a high variability of the gas yield makes any prediction of the economic effect of electrical treatment dazzling.

In order to optimize for the action of the electric field on the biogas process comprehensive studies on pilot plants but also on small lab reactors are conducted. Besides monitoring of biochemical quantities, the microbial community is investigated as well. This gives deeper understanding of the direct action of the electric but gives also an opportunity of quantitative judgement of side effect.

Corresponding author for this study in [TECHNOLOGY](#) is Uwe Pliquett, uwe.pliquett@iba-heiligenstadt.de

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