

Achievements and Perspectives Oof Anaerobic Co-Digestion: A Review

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ABSTRACT

The world is now seeking sources of renewable energy that are both economical and environmentally friendly. Purified biogas is one essential source of renewable energy that can act as a substitute for fossil fuels. Anaerobic digestion has been recognised as a biochemical method of biogas generation that can convert organic compounds into a sustainable source of energy. Anaerobic co-digestion, AcoD is considered a pragmatic method to resolve the difficulties related to substrate properties and system optimisation in single-substrate digestion processes. The present manuscript studied the research prospects and challenges of anaerobic co-digestion, and the contributions of different methods in biogas generation studies. With the increased use of anaerobic co-digestion, the complexity of the process also increases. Several mathematical models had been established to optimise the anaerobic co-digestion technique. The biological methane potential test is a preferred technique for measuring the biodegradability and decomposition rate of organic substances. Furthermore, various additives are now used to maximise methane production. The improvement and optimisation processes of biogas production still need to be investigated in greater detail. In developing countries like Malaysia, biogas production may be more economically feasible if the latest simulation and characterisation methods are used at the industrial scale. Finally, this review describes a design and development framework to incorporate various aspects to enhance biogas production.

Keywords: Anaerobic co-digestion; Biogas generation; Biochemical methane potential; Biodigestibility; Modeling

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