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Task 37 Publications

VALUE OF BATCH TESTS FOR BIOGAS POTENTIAL ANALYSIS

The key parameter for the evaluation of substrates to be used in anaerobic digestion plants is the biogas potential. However, the biogas yield, the amount of gas retrieved under technical conditions at a given biogas facility, is dependent on many factors or variables such as: the kinetics of the degradation process; the rheology and mixing properties of the digestate; the presence of inhibitory substances; and potential nutrient/trace element deficiency. The plant operator or developer must identify the crucial factors and undertake an accurate evaluation in order to minimise the risk of misjudgment of plant performance. The batch test is one method which helps to assess biogas or methane potential of a given substrate. Task 37 has published a report giving an overview on information to be gained from the test, the relation to other test methods and the limitations of the test. Inter-laboratory reproducibility of batch tests is in the range of 8 – 26 % when looking at the results of three national inter-laboratory tests. Therefore, any result should be interpreted carefully under consideration of available literature data, calculations based on chemical or physical substrate analysis and the known intra-laboratory variability of the lab analysing the sample.
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Greening the Gas Grid in Denmark

Denmark is the country in Europe with the highest share of green (decarbonized) gas in the gas grid and could be the first European country to become independent of fossil natural gas by satisfying all of gas consumption through green gas produced from food waste, industrial organic waste and agricultural by-products. As of 2019, more than 10 % of the gas in the Danish gas grid is green throughout the year. In the summertime the decarbonized share is 25 %. It is estimated that 100 % of the expected gas consumption could be green by 2035 (this equates to 72PJ) according to assessments from Aarhus University and Green Gas Denmark. Denmark plans to reduce GHG emissions from transport, housing and agriculture by 39 % by 2030. One fifth of this targeted reduction could be achieved through use of green gas as a vehicle fuel for buses and trucks
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Organic biogas improves nutrient supply

Organic biogas plants have been under consideration in Denmark for the past 15 years without a real breakthrough, until recently. The first plant was established in 2009. In 2015, a further two new organic biogas plants (Kroghsminde Bioenergy I/S and Hans Martin Westergaard Biogas Plant) began operation. In 2017, a large organic biogas plant treating feedstock from 40 suppliers was brought into operation at Kroghsminde organic dairy farm in Ølgod. These four plants proofed the concept combining organic farming with enhanced biofertilizer, and renewable biogas production from residual and waste biomass in a closed circular economy
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Distributed generation using biogas in a micro-grid

The Western region of Paraná is one of the largest and most important producers of animal protein in Brazil. Animal husbandry uses the feedlot model. This leads to significant numbers of pigs, poultry and dairy cattle generating large amounts of organic wastes. One of the challenges faced when using organic wastes for biogas is the fact that animal husbandry practices are usually spread throughout the territory and are remote from the national electricity distribution grid. If the electrical energy produced from biogas in small scale generators is not of the specified quality, particularly in regions with vulnerabilities in the electricity grid, the electrical utility may not allow connection. To overcome this, distributed generation must be supported by micro gas grids. In the decentralized model, the biogas is produced through basic biodigesters, such as covered lagoons, at the rural farms, where the manures are produced. The biogas is stored, then transported through gas pipelines to a central site, where electrical energy is generated.

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