

Biogas & Biohydrogen Laboratory Testing Services

ARC-Natural Resources & Engineering (NRE) offers several biogas and biohydrogen laboratory testing services for unusual substrate digestion designs confirmation or to perform digester troubleshooting using its new state of the art instrumentations. Its scientists and engineers can conduct simultaneous tests (up to 15 tests of various substrates) of biogas/biohydrogen production from organic waste, agricultural residues, and animal manure. All of these are performed with easy access to addition of sample, analysis, recording and report generation, all is fully integrated and automated.

For example, the AMPTS II and Endeavor allows us to conduct anaerobic digestion and dark fermentation of organic waste in smaller quantities and estimate total biogas, methane and biohydrogen potential or true value before embarking on building a huge biogas plant. Also, in turn will allow users to determine the suitable retention time of an anaerobic digester more easily and how their substrates can be mixed or co-digested.

Array of Tests

Biogas laboratory tests offered by ARC - NRE are as follows:

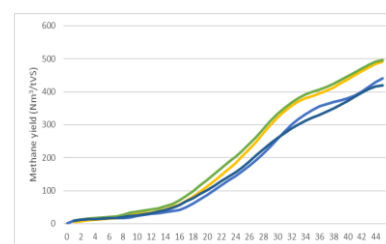
- Biochemical Methane Potential (BMP), involving substrate characterization and evaluation of its methane production potential.
- Establishing a baseline to evaluate performances of full-scale anaerobic digesters.
- Defining anaerobic digester operational parameters (e.g., pH, Temp, OLR, Hydraulic time) to optimize methane production.
- Assessing substrate quality (such as proximate and ultimate analysis) and predict methane production by full-scale biogas plants.
- Investigating the effect of co-substrate digestion on methane potential or production rate.
- Evaluating the performance of the substrate digestibility on different inoculum type and ratios.
- Continuous Stirred Tank fermentation test at 20 L capacity: in-house developed protocol that can be modified to fit specific needs and recipes.

Other related laboratory services:

- Substrate characterization including moisture, total solid, volatile solids, ash, protein, fat, and carbohydrate.
- Substrate co-digestion optimization.
- Digester troubleshooting including presence of Ammonia (NH₃), Alkalinity, Oxygen, FOS/TAC, Organic loading, Temperature variation, and Mixing.
- Gas quality tests (CO₂, H₂S, H₂O, NH₃, siloxanes).
- Determination of hydrogen producing capabilities of substrate and microorganisms.
- Assessment of pre-treatment methods for enhanced biohydrogen production.

All testing is done in state-of-the-art to be accredited laboratories.

All tests are standardized can be performed upon request.



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