Efficient conversion of waste to fuel via anaerobic digestion

Technology #cu14016

Anaerobic digestion is a process by which organic waste sources such as sewage, agricultural waste, or food waste can be converted to methane and volatile organic acids. While anaerobic digestion is an attractive option to convert waste products into fuel and industrial chemicals, conventional methods to accomplish this are limited in their ability to produce high yields of one or both products. This technology describes a method of anaerobic digestion that maximizes yields and digestion speed above conventional methods. This method is compatible with both large digestion reactors as well as smaller reactors in series. As such, this technology provides a method for increasing the speed and yields of anaerobic digestion and is compatible with most existing reactors, making implementation extremely cost-effective.

Improved waste-stream feeding enhances mixing and improves digestion efficiency

Conventional anaerobic digestion procedures often introduce the waste to be digested all at once into the reactor. This technology is able to improve both the speed and yield of anaerobic digestion by modifying timing of waste introduction into the reactor. The result is better mixing of the waste slurry and more efficient distribution of the bacteria responsible for digestion. Importantly, since this technology only optimizes how waste is introduced to a reactor, it is generally unnecessary to replace or substantially modify existing digestion tanks, making the cost of implementation relatively low.

This technology has been demonstrated and validated using computer simulations on BioWin software.

Lead Inventor:

Kartik Chandran, Ph.D.
Applications:

- Municipal sewage processing
- Agricultural and animal waste treatment
- Food waste treatment
- Sustainable energy production
- Production of organic small molecules of commercial value from waste feed stocks

Advantages:

- Compatible with existing reactors
- Greatly improves yield in both single reactors and reactors in parallel
- Yield improvement is for both methane and organic acid products, not just one singly.

Patent information:

Patent Pending
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Related Publications:


Inventors

Kartik Chandran