

Co-Digestion of Industrial Concentrates



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Summary

A pilot study to investigate the co-digestion of high strength industrial concentrates with primary sewage sludge is currently being undertaken at the Amanzimtoti Wastewater Treatment Works (WWTW), south of Durban. An existing 2 000 m³ anaerobic digester was refurbished in 2011 and equipped with a system of storage tanks and pumps to receive and dose industrial effluents delivered by road tanker. A laboratory was also set up at the facility for carrying out the necessary tests and analyses.

The aim of this research is to develop an alternate disposal route for high-strength industrial wastes. Anaerobic digestion avoids the high energy costs of aerobic treatment together with the possibility of electricity generation via methane production. However, anaerobic digestion is a much less robust process than aerobic digestion, so the introduction of industrial wastes requires careful management and control to achieve stable operation.

The project is divided into two parts: a practical part, implemented by EWS, which involves setting up and operating the co-digestion facility at Amanzimtoti; and a scientific part, implemented by PRG, which has focussed on developing protocols for managing the co-digestion process. These consist of screening tests on incoming batches of industrial waste using laboratory digesters, together with simulation models to interpret the test results, and to predict how the plant digester will respond to dosing. From these, a suitable rate for feeding the industrial waste into the digester can be determined.

Pilot plant



Operating strategy



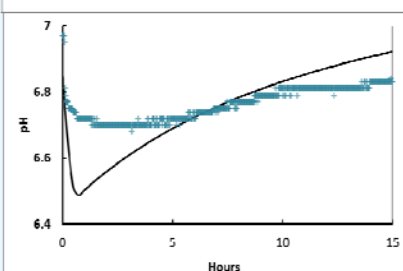
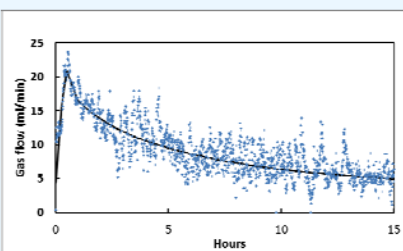
Laboratory Reactors



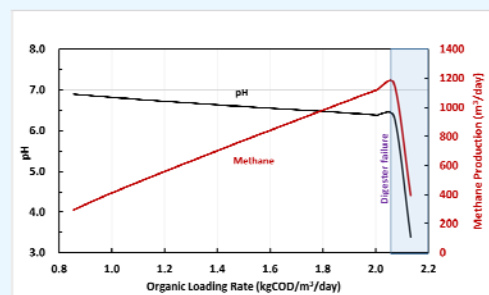
Laboratory



Full-scale digester



Laboratory screening test and model



Full-scale co-digestion model



Effluent receiving and dosing

Current status (November 2014)

Although the technical and scientific aspects of the system are in place, the final test of the system is awaiting permission for high strength industrial effluent (with COD of 200 000 mg/L) to be delivered to the plant.

Acknowledgements

