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What is the Future for Anaerobic Digestion of Solid Waste?

A new study has analysed the likely future of anaerobic digestion technologies for the treatment of solid waste. Serious issues remain to be overcome, such as increasing reliability and decreasing overall costs. It is nevertheless expected that this type of biological treatment will play an even more important role in the future.

Anaerobic digestion consists in the decomposition of organic matter by micro-organisms in an oxygen-free environment. During the past decades, anaerobic digestion for the treatment of the organic fraction of municipal solid waste has been the major development in the field of waste treatment facilities in Europe. Consequently, it has captured a significant share of the market for the biological treatment of solid waste. A digestion capacity of almost 4 million tons per year has been installed through the construction of more than 120 full-scale plants. Nevertheless, not all experiences using this system have been equally successful, mainly due to poor planning, design or operation. These issues, along with elevated investment and operating costs, may have slowed down the growth of anaerobic digestion below expectations. What is the future for this kind of waste treatment likely to be?

A Belgian study has recently addressed this question. The author assessed the past and present of this biological treatment in terms of installed capacity, development capacity, operation characteristics, market situation and diversity in applications. He also analysed the constraints to future development and the challenges to be overcome.

An analysis of the development of anaerobic digestion over the past 15 years shows that there is now a greater diversity in applications, a wide range of types of systems and suppliers, and an increasing degree of implementation in most parts of Europe.

However, certain aspects would have to be addressed in the near future in order to overcome future development limitations and challenges, including the rise of incineration, the lack of an EU biowaste directive[1] to encourage countries to apply source separate collection, the awarding of green power certificates to organics present in household waste and burnt in waste-to-energy plants. Furthermore, the overall costs should decrease in order to promote further implementation.

In spite of these limitations, it is expected that the growth of anaerobic digestion will continue in the future, and the number of constructed plants will most likely remain at the same levels as during the past 5 years.

The current study shows that anaerobic digestion has become a well established and accepted treatment for the organic fraction of municipal solid waste. It has become a good alternative to incineration or landfill disposal due to its lower environmental impacts. Nevertheless, it is not the “panacea” of solid waste treatment and there are still challenges ahead.

[1]For more information of the current Commission's approach to biowaste management, consult the website: http://ec.europa.eu/environment/waste/compost/index.htm

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