

Maximizing biogas production through effective mixing technology and active seal protection

Ruhr region's biogas plant achieves efficient energy consumption, reduced operating cost and increased performance



Nesemeier GmbH in Blomberg is an innovative, comprehensive service provider and manufacturer of high-quality components in the field of biogas plant technology as well as in the construction of plants and pipelines. With a focus on sustainability and efficiency, the company offers a wide range of services from refurbishment and installation to maintenance of biogas plants. As a certified Xylem partner workshop, Nesemeier GmbH also specialises in the professional repair and maintenance of mixers.

Problem

At a biogas plant in the Ruhr area, which has been in operation since 2014 and achieves an impressive biogas production of 1300 m³ of biogas per hour. It processes approximately 500 tonnes of manure and 80 tonnes of maize per hour, biogas is fed into the public grid.

However, the daily use of 500 tonnes of manure poses specific challenges. The substrate has a dry matter or total suspended solids (TSS) content of 13 to 14%, which leads to increased pressure on the mixers. In particular, contaminants such as strips of plastic tape contained in the manure and wrapped around the mixer significantly impair the mixer operation.

Challenge

High dry matter content in the substrate and tangled fibrous matter lead to increased pressure on the mixer in the tank

Customer

Nesemeier GmbH

Task

Installation of high performing mixer that meet substrate mixing demand

Project result

Optimal circulation flow and substrate homogeneity, energy-cost efficiency, and reduce operational costs

“Our long-standing collaboration with Xylem is based on first-class product quality and an effective communication culture.”

Torsten Sandmann | Sales Manager, Nesemeier GmbH

Solution

The installation of new, powerful mixer was intended to enable the plant to better cope with the challenges posed by the substrate in order to maximise efficiency and ensure sustainable energy production. To replace the old agitators in the 30-metre diameter and 12-metre high digestate storage tank, three new Xylem Flygt 4460 mixers with 12 kW power were used.

The robust and energy-efficient midsize mixers with active seal protection and large, extra optimized blades made for non-Newtonian liquids are especially designed to withstand demanding/harsh environments such as in biogas applications, and increases the efficiency of substrate homogenisation.

The active seal protection is built directly into the mixer housing to ensure that foreign objects present in the substrate are not tangled around the blade area. This significantly reduces the load on the mixer and stabilizes the power consumption, which consequently delivers consistent and efficient performance.

Result

The demands of the substrate have been overcome. Thanks to the superior performance and advanced features such as the active seal protection of the Flygt 4460 mixers, the normal circulation flow of the substrate has been restored, the power consumption has been optimised and the service lifetime of the mixers increased.

This innovation ensures that the mixers now operate with optimum energy consumption, which reduces the operating costs and increases the efficiency of the biogas plant.



Ruhr area biogas plant



Xylem Flygt 4460 mixer



Mixer installation in fermenter

Did you know?

Mixers play a key role in biogas plants as they ensure optimal mixing of the substrate.

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