

Sustainability success for Dairygold: mixers deliver biogas system results that matter

Flygt mixers are a critical component at the heart of this world's largest ADI-BVF® digester



Dairygold is Ireland's leading farmer-owned co-operative, processing around 1.43 billion litres of grass fed milk each year. Based in Mitchelstown, Cork in Ireland, sustainability is at the heart of everything at Dairygold. From its farming practices, through to production and processing of milk, butter, cheese, whey products and more at its Castlefarm complex.

Challenge

As one of Ireland's largest dairy producers, to consider the installation of an anaerobic digestion wastewater treatment system to be a success, it was critical to get the right mixing in the process. Dairygold turned to Xylem for solutions.

With ambitious energy consumption reduction targets to meet its environmental goals and mitigate the impact of increasing energy costs, the operating team turned its focus to the site's wastewater treatment plant. Dairygold needed to find an alternative that met its operational demands. With several treatment streams producing a total flow of 9,800 m³/d, the biological nutrient removal (BNR) system was periodically overloaded. Foul odour was also a growing concern. They wanted to address these and follow their push to reduce energy consumption and achieve an operating model for circular economy.

Challenge

Ambitious energy efficiency goals to achieve environmental and cost reduction objectives

Customer

Dairygold in Country Cork, Ireland

Task

Effective mixing solution for anaerobic digestion process

Project result

Energy cost-efficiency of 7%, reduction of sludge volume by 50%, elimination of foul odour, and low operational maintenance with zero digester cleaning

“We’ve been impressed by the consistency of the Flygt mixers performance and how energy-efficient and robust they’ve proven to be.”

Derry Cadogan | Environmental Operations Manager, Dairygold

Solution

In partnership with Xylem, Dairygold installed the world’s largest above ground Evoqua ADI-BVF® digester. This anaerobic digestion (AD) wastewater treatment system is a highly effective way to treat the industrial wastewater, reduce sludge production and produce biogas that can be used for energy. For Dairygold, the pre-treatment digester serves to remove the high COD loading from the wastewater. This reaches up to 20,000 kg of COD a day - a 90% removal rate. This process produces up to 14,000 m³/d of biogas. The effluent from the digester then goes on to the site’s BNR treatment plant, where nutrients such as phosphorus are polished and removed before discharge.

Central to the performance of the system is the digester’s mixers. Two Flygt 4680 mixers were selected, for high efficiency mixing. One was installed at a low and one at a medium level of the AD tank to ensure the sludge blanket on the bottom of the 10m deep, 80m diameter digester tank always remains uniform. It is critical that the sludge, which can reach up to 4% solid content, is always uniform, so there is good contact with the incoming feed.

Result

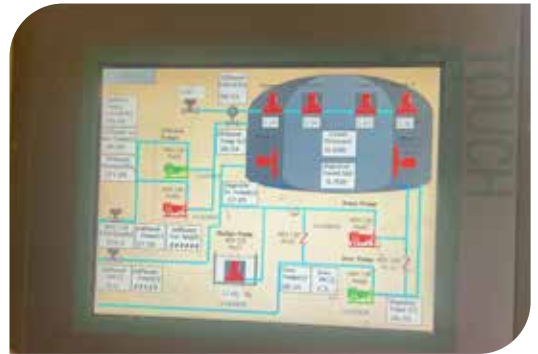
Since 2012, the Xylem Flygt 4680 mixers have been delivering exceptional results, year after year. Their reliable operation has consistently ensured peak wastewater treatment performance, with COD levels averaging below 200 mg/L and BOD levels under 50 mg/L. Remarkably, this performance is achieved with just a few minutes of intermittent mixing per day. The results speak volumes:

- 50% reduction in sludge volume
- Odour eliminated
- Zero digester tank cleaning required
- Smart, low-maintenance operation

The mixers have stabilized and optimized anaerobic digestion, simplifying plant operations and reducing energy use by about 7% for Dairygold.



ADI-BVF® digester



Installed mixers at a low and at a medium level



Dairygold anaerobic digestion wastewater treatment

Did you know?

Flygt compact mixer components have been engineered for reliable operation, efficient mixing, and to reduce energy costs.

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