

Sustainable cost reductions: biogas from liquid wastes

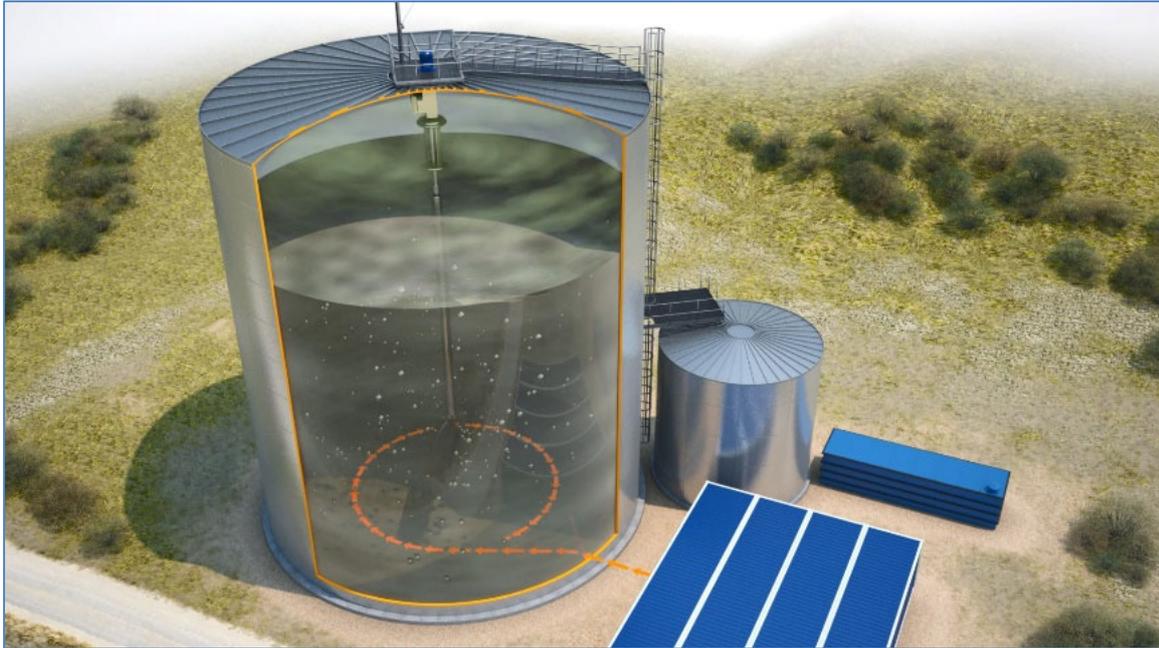


Photo: The Biomar AWR anaerobic reactor converts wastewater and liquid wastes with a high load into biogas

Generate energy instead of consuming it: treating liquid wastes and wastewater on a communal basis to generate biogas is an interesting alternative to conventional wastewater treatment and disposal for dairies. This is becoming a serious consideration for the future for milk producers given the globally increasing challenges arising from wastewater regulations or CO₂ guidelines.

More and more dairies are now facing a problem: how to dispose of their liquid waste products. Spreading slurry is not a realistic option any more for the agricultural industry due to the problems of overfertilisation or hygiene. The challenge for dairies is that their liquid waste products generally have a very high organic load. Wastewater accumulates, typically, as a result of cleaning and rinsing processes in production. Local rural treatment plants where most dairies are located are not designed to cope with such high organic loading. In many countries across the globe, milk processors are not even connected to public-sector treatment plants.

Across the globe, dairies therefore have to treat their wastewater themselves or pretreat it before they are allowed to introduce it into the public sewerage system. "This is usually done in aerobic biological plants which requires an oxygen supply," says Dennis Wiedenhaus, Project Director at EnviroChemie: "That's expensive and consumes a great deal of energy."

Anaerobic alternative – electricity savings

EnviroChemie is therefore working with a large dairy in Morocco which is part of an international food group to find an alternative route: instead of disposing of all the liquid waste, the company is turning it into biogas. To achieve this, EnviroChemie has installed a large anaerobic bioreactor which excludes the oxygen, metabolising the liquid waste and resulting in methane (CH₄), i.e. biogas, and carbon dioxide (CO₂).

This has twin benefits: on the one hand, the anaerobic process saves more energy than aerobic processes. The highly loaded wastewater flow from production is pretreated separately in the anaerobic reactor. This reduces the load on the aerobic wastewater treatment process, saving energy

[Info-Box1:]

Improved CO₂ balance by treating liquid waste

The dairy in Morocco process the following liquid wastes and residuals using anaerobic technology:

- approximately 160 m³/day of floatation sludge and the sludge from the biological treatment plant.
- 80 m³/day of whey
- 12 m³/day of returned product and exhausted milk

[Info-Box2:]

Sustainable plant concept

This special plant solution produces biogas from sludges and liquid wastes amongst other things and saves resources:

- 30% reduction in electricity consumption: the load on the aerobic wastewater treatment (aeration) is reduced by pretreating the wastewater from production using anaerobic technology
 - 30% reduction in oil consumption due to using the biogas produced to generate steam
- Reduction in disposal costs: liquid wastes, residuals and sludges are biologically processed instead of being sent for disposal



Photo: The sustainable plant solution reduces consumption of resources and operating costs

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