

**Efficiency: Generating Energy from organic Wastes, Sludges and Whey**

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**Introduction**

On processing milk in dairies, different wastes are generated. Fat-containing sludge, sludge from wastewater treatment (WWTP) as well as product waste or whey (permeate) are treated with the Biomar<sup>®</sup> Liquid Solid Digestion System.

**Aim of Biomar<sup>®</sup> - Liquid Solid Digestion System**

Biogas is generated by anaerobic microorganisms. The aim is the biodegradation of organic components into biogas for use e.g. in a steam boiler.

**Best Practise - Process description**

Dairy WWTP generates concentrated organic flotation sludge (mainly fat and grease) and excess biological sludge. In production, a significant amount of whey and expired milk is rejected. These organic products require a digestion plant for biogas production and waste reduction.

The ideal condition for the anaerobic Biomar<sup>®</sup> reactor is a homogenous environment within the entire reactor. Finely structured biomasses build up quickly. Processes for decomposition benefit from the intensive contact between the sludge load and the anaerobic microorganisms. A special distribution system within the reactor supported by a strong mixing aggregate prevents inactive zones in the reactor. A highly effective degassing unit separates biogas from sludge. Nutrients and conditioning solutions contribute to optimal operation even with inconsistent feed conditions. The biogas is removed from the reactor and is transferred to a steam boiler. The sludge will be dewatered by a centrifuge. The filtrate will be pumped to the WWTP.

**Results**

The waste volume is considerably reduced. Liquid output is send to the WWTP. One ton of input sludge gains approximately 20 m<sup>3</sup> of biogas. Dry matter will be only the half.

**Conclusion**

The Biomar<sup>®</sup> Liquid Solid Digestion system is highly effective for treating waste containing high amounts of organic solids and generating biogas. Extracting energy from residues improves overall resource use.