Sustainable Handling of Waste Streams from Slaughterhouses

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German company aims to demonstrate the benefits of biogas and help companies to manage their waste streams.

Slaughterhouses generate large volumes of waste streams as certain parts of the animals are not suitable for human consumption. They also consume lots of water and energy in production process and maintaining proper temperature regimes. If not handled properly, organic streams from slaughterhouses can threaten animal and human health and spread diseases. They are categorised as animal-by-products and most countries define specific and often costly procedures for their handling by specialised companies that producers have to pay.

Biogas technology offers sustainable handling of animal-by-products and waste streams from slaughterhouses. It can play an important role in integrated waste and resource management and contribute to fulfilling sustainability and environmental goals in this industry.

Starting from simple farm-scale biogas plants for fermenting agricultural waste 30 years ago, Krieg & Fischer Ingenieure GmbH is now a leading firm in complex, multi-stage, industrial anaerobic fermentation technologies for organic waste and by-products from the industry.

A very impressive reference plant developed for processing slaughterhouse waste is located in Belgorod, Russia. With the introduction of feed-in-tariffs, the client understood that a biogas plant is the best solution to both save on gate-fees and produce green energy.

The plant was designed to process 80t of corn silage, 80 m³ manure, 4t sewage

sludge and 45t slaughter-house residues per day. Total feedstock intake is 76,650t per year. The plant consists of two 16 m upright digesters with central agitator (glass coated steel tanks, 2 x 3,035 m³) and two secondary digesters with gasholder roofs.

Two feeding systems are in operation, one for the corn silage and one for the other substrates. The storage capacity for the waste input is 300 m³. Operation is mesophilic, with heat recovery. The specific biogas yield is 120 Nm³/t VS. Biogas is used for production of heat and electricity in 2 gas engines, 1,2 MW each.

Belgorod biogas plant produces 19 million kWh of electricity per year. This provides power to 10,000 private households.

Krieg & Fischer Ingenieure GmbH was responsible for conception, preplanning, detailed and final construction plans, local supervision of construction and start-up of the biogas plant.

Our latest project offers another solution for the slaughterhouse waste. In this case, engineering team of Krieg & Fischer Ingenieure GmbH cooperates with water management company and biogas plant is integrated with overall wastewater treatment solution for a slaughterhouse in Germany. The customized biogas plant is designed to process over 100,000 tons of organic waste, consisting of slaughterhouse waste (stomach and intestine content, intestines), flotate sludge and sewage sludge, with calculated biogas yield of >650 m³ per hour. As optimal solution for this mixture of substrates, the AD process is designed with two upright steel digesters , one secondary digester with gas holder roof, dewatering unit and ammonia stripping. The liquid phase is further treated in a 4 stages waste water treatment plant for injection into a nearby river. The solid phase is going to be burned for heat production.

 With each new project, with each new challenge to combine different substrates, Krieg & Fischer GmbH aims to demonstrate benefits of biogas and help companies in this sector and beyond to manage their waste streams, optimise wastewater treatments and reduce CO_2 emissions while producing green energy.

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