



Case Study 7

Sustainable treatment of ABP processing wastewater

Rendac Son, a Netherlands based Darling Ingredients brand

Wastewater from the processing of animal-by-products (ABP) is produced when water is evaporated from the ABP during processing. This moisture is condensed and sent for treatment along with wastewater from technical applications and cleaning operations. By capturing the high-water content of the ABP (circa 70%) most ABP processing plants are net producers of water. The wastewater typically contains fat, organic matter (proteins) and ammonia. Fats removed

from the wastewater by preliminary treatment are reused for technical applications or as energy sources in biogas plants, helping to recover nutrient from the wastewater.

The wastewater undergoes further biological and nitrification/denitrification treatment to reduce organic matter and ammonia to acceptable water quality standards to allow safe return of the cleaned water to the environment.

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In 2013 an innovative wastewater treatment system was introduced at Rendac Son in the Netherlands that integrates anaerobic treatment with anoxic ammonium oxidation (Anammox). This patented microbial ammonium removal technology, developed by Delft University of Technology removes nitrogen from wastewater and converts it into nitrogen gas and water. Anammox technology removes up to 95% of nitrogen and is extremely energy efficient, using 60% less energy than classical nitrification/denitrification processes.

Organic matter is not required and is recovered in anaerobic processes. This produces biogas that is converted into green electricity or green gas. Less sludge is created, and this is processed into sustainable biofuels. The innovative process reduces the CO₂ emissions of the Son plant by around 5,000 tonnes per year, helping to optimise the sustainability and energy management of the facility. The overall electricity savings, more due to higher efficiency and utilisation of biogas corresponds to the annual consumption of approximately 3,000 homes.

The Anammox technology has proven to be a successful, robust and sustainable wastewater treatment system and can be cost-effectively applied at large scale ABP processing plants with high nitrogen loads and low organic / N ratios.

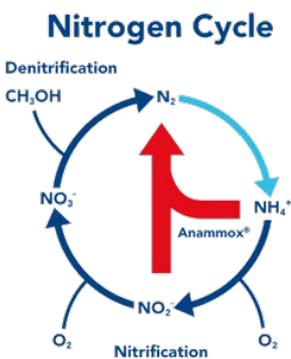


Figure 1 - The Nitrogen Cycle

