

Good neighbour confectionary plant compactly achieves outstanding waste water quality on busy site

Food and beverage companies face constant challenges to ensure they minimize their physical and environmental footprints in rapidly growing cities where space is at a premium, clean water supply is precious and global warming is a major issue.

One company providing an answer to these challenges is Global Water Engineering (GWE), which has used advanced anaerobic technology at a confectionary plant to meet (and exceed) environmental objectives within one of the toughest municipal regulatory regimes in Asia – Bangkok.

The confectionary plant involved recently upgraded its waste water and renewable energy plant in line with the city's Action Plan on Global Warming Mitigation 2007-2012, using advanced anaerobic technology from GWE that cuts the Chemical Oxygen Demand from discharge water by more than 90 per cent (to 1600mg/l).



Schematic of a typical GWE anaerobic installation

The new process water treatment plant integrates seamlessly into the plant's existing facility to not only lift output standards beyond specification, but also to produce 1,800 Nm³ of biogas a day at nominal load. "The client has said the installation is fantastic. It is exceeding the 90 per cent COD (chemical oxygen demand) removal specification in service and frequently achieving 95 per cent," says GWE CEO Mr Jean Pierre Ombregt.

The plant delivers biogas at 70 per cent methane content to power boilers and heat processes that in other plants might consume expensive and polluting fossil fuels. Meanwhile, the waste water plant now requires less energy to operate than before.

The treatment plant consists of pretreatment, anaerobic stages and the previously existing aerobic stage. The pretreatment stage includes a pre-existing equalization basic and degasifying basic. Prior to entering the anaerobic reactor (UASB) the pH is adjusted by addition of sodium hydroxide (NaOH) inline, followed by an inline mixer.

The Bangkok confectionary plant's wastewater passes through several pre-treatment steps before entering a GWE methane reactor in which the wastewater's organic content (COD) is digested by bacteria in a closed reactor, degrading the compounds and converting them into valuable biogas and cleaned effluent.

Biogas from the process is collected and used to power the plant's boiler drying equipment – and in many other instances to generate electricity through on-site generators installed by many food and beverage companies, saving money that would otherwise be spent on bunker oil, which is subject to wide fluctuations in price and which, Jean-Pierre Ombregt says, can only increase in price over time. Surplus power is sold back into the grid.

"Green power from biogas is big news for industry these days, but GWE has successfully built and commissioned more than 75 biogas utilisation systems for clients worldwide over the past 15 years," says Mr Ombregt. "We have completed installations globally that combine specialized know-how in generating biogas with our extensive range of anaerobic reactors, and in supply and installation of biogas re-use and handling systems for fossil fuel replacement or power generation."

GWE clients include Budweiser, Chang, Carlsberg, Coca Cola, Corn Products International, Danone, Fosters, Heineken, Interbrew, Kraft, National Starch & Chemicals, Nestlé, Pepsi Cola, SAB-Miller, San Miguel, Singha, Sunkist, Tsingtao and many more.