How sweet it is: Cane processors profit with green energy and environmental benefits

November 20, 2013 Featured, Grain & Wheat News No comments

United Farmer and Industry plant commissioning by GWE

A global leader in the production of **green energy** from **food** and **agribusiness wastewater** is deploying advanced **anaerobic technologies** that achieve high returns of **biogas** from the world's largest crop, **sugar cane**.

The crop – which is grown in more than 90 countries with a worldwide harvest exceeding 1.6 billion tons – has historically not been suited to biogas production because the vast amounts of water used in its processing were too weak in their organic carbon concentration to yield profitable amounts of methane.

However, Global Water Engineering says the industry has progressively used less water in recent years, increasing its waste stream concentrations to levels where it can be very successfully exploited for biogas and produce less effluent pollution through the latest anaerobic technologies.

"Use of less water can produce major environmental benefits in the cane industry, where the size of a processing plant bears little relation the huge amount of waste water it has traditionally produced," says **GWE Chairman and CEO Mr Jean Pierre Ombregt**. "We are now getting towards the stage where, instead of having a series of huge anaerobic, and aerobic lagoons impacting the environment, we can treat the effluent in contained anaerobic reactors where biogas is extracted and influent waste water is cleaned of most of its impurities without release to the environment."

GWE has installed more than 300 anaerobic wastewater plants globally, which clean the water to high discharge standards while producing biogas (methane, CH4) that can be used to generate green electricity for sale to the local grid or to fuel boilers and other factory plant fuel consumers. Many of the plants utilising the biogas in this way achieve payback of plant costs in two years – or even a year in some cases – as they permanently reduce the amount of fossil fuel used and generate permanent environmental gains and financial savings.

One of the latest cane sugar mills to use **GWE Anaerobic technology** incorporating its **ANUBIX™ B reactor** is the **United Farmer** and **Industry cane sugar mill** at **Khon Kaen** in **Thailand**, a country which is one of the world's largest cane sugar producers, along with Brazil, India, China, Pakistan and Mexico.

The plant commissioned there this year has a capacity of 3500 m^3 a day of waste water containing 22750 Kg a day COD (Chemical Oxygen Demand) of natural origin that can be broken down into biogas by anaerobic bacteria.

The process employed at United Farmer and Industry comprised influent screen, equalisation, pH control, anaerobic treatment, biogas flare, two-stage biogas sweetening (Bio-Sulfurix™ followed by activated carbon filtration).

Biogas production is currently building to 9000 Nm^3 a day (75 percent CH4) , which will be used as fuel in several factory steam boilers.

Wastewater effluent levels have also benefitted substantially, with a minimum of 85 percent removal of COD being achieved (to a maximum 975 mg/l COD, produced from influent with 6500 mg/l COD, or 3250 mg/l BOD_5 – Biochemical Oxygen Demand).

GWE's "workhorse" ANUBIX™ B medium-to-high loading rate UASB (Upflow Anaerobic Sludge Bed) reactor employed at the plant is of a type used for most low-to-medium strength mainly soluble carbohydrate containing effluents. The effluent COD reduction achieved at United Farmer and Industry is outstanding by cane industry standards, while in broader food

and beverage industry service such technology has attained amazing COD removal efficiencies, in some cases up to 99 percent.

"In addition to substantial environmental benefit from cleaner water being treated in reactor tanks rather than lagoons, the United Farmers Plant achieves a supply of green energy that delivers energy savings virtually in perpetuity," says Mr Ombregt.

Existing GWE anaerobic technologies of the type employed at United Farmer and Industry typically produce enough green energy to pay for the cost of their installation in typically one or two years.

In addition, the reactors reduce the need for huge lagoons with their associated odour, land use and environmental leaching issues.

Energy savings alone can amount to millions of dollars or Euros a year. For example, Corn Products – a major producer of native tapioca starch, sweeteners and modified starch in Thailand – uses GWE anaerobic technology within its wastewater plant to produce up to 70,000 Nm^3 a day of biogas at 70 percent $CH4$. This corresponds with circa 43,750 kg a day of heavy fuel oil, worth US$ 12.7 million ((€9.5 million) a year. *(This assumes a plant running 330 days a year at full capacity and a Heavy Fuel Oil, HFO, price of 0.83c US or .62 Euro a litre)*

The advanced anaerobic technology such as that installed at United Farmers and Industry is strongly applicable to any factory or process with one or more digestible solid waste streams Such plants – including breweries, fruit, food waste, agro industries, and energy crops including corn and cane used for ethanol – can easily use this technology to generate energy. It opens the door to environmental and production efficiency gains globally, say GWE.

As a result of their efficiency, anaerobic digestion facilities have been recognized by the United Nations Development programme as one of the most useful decentralized sources of energy supply, as they are less capital-intensive than large power plants. They can also benefit local communities by providing local energy supplies and eliminate the need for large and often smelly and environmentally challenging settling lagoons.

With increased focus on climate change mitigation, the re-use of waste as a resource and new technological approaches which have lowered capital costs, anaerobic digestion has in recent years received increased attention among governments in a number of countries, particularly those of emerging regions where infrastructure investment is high, such as Asia, South America and Eastern Europe.

For further information globally, please contact Marc Eeckhaut, Executive Vice President, Marketing and Technology, Global Water engineering, *mail@globalwe.com*
Addresses/contacts of the nearest GWE office are located at
www.globalwaterengineering.com

- See more at: http://globalmilling.com/how-sweet-it-is-cane-processors-profit-with-green-energy-and-environmental-benefits/

http://africagriculturalnews.com/news/how-sweet-it-is-cane-processors-profit-with-green-energy-and-environmental-benefits