Using Waste to Save Millions

November 25, 2015

A green energy plant installed by Australia's CST Wastewater Solutions at a leading beef processing unit in Queensland's Darling Downs is being recommended as a model for environmental and business efficiency for food producers worldwide.

Not only will the abattoir now be able to generate a sizeable portion of its own energy needs, it will also clean waste water and even reduce plant odors.

CST installed Global Water Engineering's COHRAL plant at Oakey Beef Exports as part of a green energy initiative by its parent company, the Japanese meat processor NH Foods. Opened earlier this year by Australian Federal Industry and Science Minister Ian Macfarlane, the plant will extract green energy biogas from the meat processor's wastewater streams to replace millions of dollars' worth of natural gas currently consumed at the abattoir.

Kelly Hawkins, Biogas Technician at Oakey Beef Exports in Queensland, says she is very satisfied to be responsible for the day-to-day operation of the plant, which also produces high-quality waste water as it replaces fossil fuels.

"The most satisfying aspect of my role at Oakey is being witness to the technology and processes involved in creating renewable energy within an existing production business. Globally, businesses are no longer in the position where infrastructure and

productivity can be advanced without taking note of the damage it is causing the environment. It is especially exciting that this system is an Australian first," says 24-year-old Hawkins.

GWE's COHRAL (COvered High Rate Anaerobic Lagoon) will produce 183.3 gigajoules of energy a day when it reaches design capacity through the combustion of produced methane. According to CST, the new plant delivers high quality wastewater by extracting organic waste content, which is converted into methane to replace fossil fuels. The GWE anaerobic digestion technology can remove more than 70-90 percent of organic waste content.

Pat Gleeson, Oakey Beef Exports general manager, says that the green energy produced represents 40 percent of the facility's current usage of natural gas and will produce direct ongoing savings year after year. The cost of construction is expected to be repaid within five years. He adds that the facility also benefits from reduced greenhouse gas emissions, improved quality of wastewater, and greatly reduced odor emissions from the plant.

According to Gleeson, burning the methane will save about 12,000 metric tons of CO2, equivalent to removing 2,700 cars from the road.

In addition to reducing the plant's dependence on increasingly expensive supplies of natural gas, the Global Water Engineering anaerobic digestion plant will simultaneously produce wastewater that is far cleaner than typical waste lagoons.

Applicable to both livestock and cropping operations, COHRAL technology uses concentrated anaerobic bacteria to digest 70-85 percent of the organic matter (COD, or Chemical Oxygen Demand) in Oakey Beef Exports' wastewater to produce effluent of far higher quality than typical open lagoons. Closed tank (reactor) designs, where applicable, can achieve even higher digestion levels and efficiencies, with more than 90 percent achieved in service by GWE plants.

Biogas will be stored at the Oakey Beef facility in a 6000m³ capacity flexible PVC-coated polyester fiber flexible storage balloon engineered to be permanently gastight with high

operational reliability and optimum safety.

While GWE's anaerobic wastewater technology has been proven worldwide at more than 300 installations of totally enclosed tanks or reactors, this is the first time it has been applied to a covered lagoon, an application where it has enormous further potential in countries with strong agribusiness sectors.

"In addition to the obvious waste-to-energy benefits, the process also helps curb odors that emanate from open lagoons in processing plants," says Michael Bambridge, CST Wastewater Solutions' managing director. "This is becoming a much bigger issue in Australia as urban encroachment means agribusiness and expanding communities are located much closer to each other than previously.

"So instead of open lagoons being potential dumping grounds for environmental problems, closed installations such as Oakey Creek's represent an outstanding contribution to good community relations.

"Yet another outstanding benefit is that anaerobic digestion produces reliable and predictable base-load power – unlike some other green-energy technologies – it is not dependent on the wind blowing or the sun shining. The environmental and cost benefits of COHRAL technology as deployed by Oakey Abattoir are outstanding and something we expect to attract world attention for agribusiness, including meat, dairy and crop waste processing," says Bambridge.

Methane biogas produced in covered anaerobic lagoons is not only prevented from escaping into the atmosphere (where it is many times more damaging than CO2 emissions) but is also harnessed to generate energy. Additionally, the process also helps curb odors that emanate from open lagoons in processing plants, a sensitive issue especially in urban areas where agribusiness and expanding communities are located much closer to each other.

Continuously supporting innovation such as the new GWE plant since the initial purchase of Oakey Abattoir in 1987, Nippon Ham has invested more than $A100 million dollars to grow capacity from 300 head a day to the current capability of 1300 head a day. Their next phase of plant development is in the final design stage, and focuses on upgrading the existing cold storage and chilling capacity with a construction cost of $A50 million over the next two years.

Established in 1956, Oakey Beef Exports is one of Australia's largest beef processing plants, employing more than 750 people from Oakey, Toowoomba, and the surrounding districts.

It's hoped that annual production will soon increase from 298,000 cattle to 560,000. This will require almost doubling the work force to 1,400 and moving production to a seven-day schedule.

This site uses cookies More info No problem