Green energy from wastewater

Source: WaterLink International
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Global Water Engineering has partnered Chokyuenyong Industrial in Thailand to cut effluent Chemical Oxygen Demand (COD) pollution levels at its cassava production plant by more than 95%. At the same time, it will be extracting gas from its waste water to power its boilers and generate electricity both for its own use and to sell to the provincial grid.

Processing 1200 tons of cassava roots a day, Chockyuenyong Industrial, headed by Tawatchai Yuenyong, has shown what it takes to become a leading international industrial citizen and good local neighbour to surrounding homes and businesses. The company uses GWE anaerobic technology supplied by local agent Retech Energy, which has a capacity of 3,200 cubic metres of effluent a day.

The installation provides an international model of how it is possible to attain top environmental standards of wastewater cleanliness while generating green power and carbon credit profits, says GWE CEO Jean-Pierre Ombregt. GWE has completed more than 300 water and wastewater projects in more than 60 countries including Asia, Africa, North and South America, Australia, China, Europe (including Eastern Europe) and Russia, and has successfully built and commissioned more than 75 biogas utilisation systems for clients worldwide.

Commissioned and refined over the past three years, the Chockyuenyong installation has cut the Chemical Oxygen Demand (COD) pollution level of influent wastewater from 22,500ml/l (14,525mg/l Biochemical Oxygen Demand, BOD O2) to less than 1125mg/l, resulting in substantially cleaner discharges to treatment ponds and ultimately the environment. It returns up to 2.7Mw of electricity a year to a provincial power grid (PEA), which serves some areas distant from major generating sources and welcomes fresh input of green power generated locally. The installation also saves the equivalent of up to 21,000 litres a day of fuel oil by producing up to 34,000 Nm3 of bio gas. This gas is used to power the boilers and heating equipment used extensively in cassava drying and processing, and generates electricity for the large amounts of rotating equipment used.

The Chockyuenyong installation generates carbon credits under the United Nations' Framework Convention on Climate Change, through which it earns valuable internationally tradeable CER certificates, representing the right to emit one ton of carbon dioxide or carbon dioxide equivalent.

Chokyeunyong's achievement has implications for a broad range of primary processing industries and particularly for cassava-producing countries that turn this relatively low-cost raw material into high-value starch for domestic and international markets," says Mr Ombregt.

"The UN's Food and Agriculture organisation estimates that each year, some 60 million tons of starch are extracted from a wide range of cereal, root and tuber crops for use in a staggering variety of products: as stabilisers in soups and frozen food, as coating on pills and paper, as adhesives on stamps and plywood, as a stiffening agent in textiles, as raw material for making ethanol, in non-food products, such as pharmaceuticals and thermobioplastics and even as binder in concrete.

"Our technology applies to a broad range of these crops, including particularly the 10% of world starch that comes from world cassava root production of some 200 million tons a year. The FAO says many developing countries could strengthen their rural economies — and boost cassava farmers incomes — by converting more of that relatively low-cost raw material into high-value starches."

Not only does the plant have a highly efficient wastewater system that complies with Thailand's strict environmental standards, but also it will continue to repay investment over many years ahead.