

# Rwandan brewery uses energy produced from wastewater to heat boilers

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A brewing company in Rwanda is now producing energy from wastewater organic pollutants to power its boiler equipment.



Facilities at Skol Brewery, Kigali

The Skol Brewery has partnered with the Global Water Engineering (GWE) to turn wastewater organic pollutants into biogas for internal use while achieving high environmental benefits.

Rwanda has a strong need for sustainable technologies, with the World Health Organisation's African Regional Office identifying, "Rwanda undoubtedly faces significant environmental challenges, and needs to invest significantly in adapting to current climate challenges as well as in adaptation to future climate change."

Water shortages are also a significant problem in Rwanda, with water needs in Kigali city being

only met at 50% or less especially in dry season in a city with urbanisation growth rate of more than 9% annually.

Skol Brewery Rwanda's new installation, incorporating some of the world's most efficient and proven GWE waste-to-energy technologies, aligns Skol Brewery with top international environmental wastewater standards and demonstrates the company is taking important action to ensure the sustainability of its operations, says GWE Chairman and CEO, Mr Jean Pierre Ombregt.

The new process at the Kigali plant involves GWE's globally distributed anaerobic waste digestion technology proven in more than 150 waste-to-green energy plants worldwide, including dozens of breweries. The technology not only improves sustainability outcomes, but also decreases operating costs.

The anaerobic digestion technology is also integral to 415 high quality industrial wastewater and waste treatment plants in 62 countries, the benefits of which are applicable to any food and beverage, agribusiness or manufacturing operation with one or more organically loaded wastewater and waste streams.

Skol Kigali's new continuous system – which replaces an old sequential batch reactor – highly efficiently removes organic waste material from production wastewater, converting more than 90% of the wastewater's Chemical Oxygen Demand (COD). The new wastewater treatment plant is a reliable method of turning organic waste into usable biogas.

This organic material is transformed into biogas (mainly methane) to replace the need for an equivalent amount of fossil fuel to power the plant boilers equipment, while the treated wastewater effluent leaving the plant delivers high environmental benefits through achieving discharge limits of 250mg/L COD.

The new process – now successfully in its first full year of operation – begins with pre-treatment, followed by a modern treatment line utilising GWE's robust ANUBIX™-B system at the heart of the operation. A sludge management and dewatering unit is also used to process any excess sludge.

"The methane-rich biogas produced by the ANUBIX™ process is reused to power an existing boiler unit, replacing baseline power requirements, which is a further benefit to the brewery," said Mr Ombregt.

"Breweries, and other food and beverage companies, are often literally flushing money down the drain in the form of wastewater. They are spending money to treat or dispose of their waste water, when they could be treating it as a resource and turning waste water into a profitable source of energy," he said.

Because it is a continuous system, green energy can continue to be generated consistently. This base load green energy capacity represents a further major advance on the plant's previous Sequence Batch Reactor system. The new GWE system handles wastewater inlet quantities of 920 m3 per day.

The upgraded plant has a capacity of 3220 kg/L of organic matter, or Chemical Oxygen Demand (COD) load. Inlet COD concentration is 3500 mg/L and the COD effluent discharge limit is 250 mg/L, with the GWE process removing more than 92% of COD and radically improving the effluent water quality, meaning that Skol Brewery has a minimal impact on local water systems.

"Using this sort of technology to not only treat wastewater and turn it into green energy, but also to power existing boilers or otherwise utilise the additional biogas is becoming increasingly common as forward-thinking companies strive to meet sustainability initiatives and minimise their negative impacts on the environment. Larger anaerobic treatment installations can even generate additional profit in perpetuity, because excess biogas or energy can be sold back to the grid." said Mr Ombregt.

Developing countries like Rwanda are highly aware of the need for sustainability, and are increasingly implementing technologies to safeguard the environment and precious natural resources like water.

While there is still a long way to go – and this applies to everyone, globally – early adopters of environmentally harmonious technologies like Skol Brewery will pave the way for further advances in energy-efficiency that will benefit communities and the country as a whole.