



Zest WEG in Zimbabwe ethanol expansion

Leandro Magro, steam turbines manager at Zest WEG, talks about Green Fuel's state-of-the-art ethanol facility at Chisumbanje in south-eastern Zimbabwe, where the latest technology TGM steam turbine generator set is being used to produce high-grade anhydrous ethanol, from a high-pressure boiler that increases energy recovery.

Zest WEG is supplying a TGM planetary gearbox with a WEG variable speed drive (VSD) and a WEG medium voltage motor for the mill expansion at Green Fuel, Zimbabwe's leading producer of renewable fuel.

According to Leandro Magro, steam turbines manager at Zest WEG, the equipment is destined for the new sugar cane crushing mill Number 6 at Green Fuel's state-of-the-art ethanol facility at Chisumbanje in south-eastern Zimbabwe. The plant uses the latest technology to produce high-grade anhydrous ethanol, with a high-pressure boiler and a TGM steam turbine generator set increasing energy recovery. This allows the plant to be self-sufficient in its energy needs and to generate excess electricity.

Green Fuel's ethanol project – awarded National Project status by Zimbabwe's government for its economic contribution – reduces the country's reliance on imported petroleum products. It also produces less greenhouse gas emissions than unleaded petrol and can be sold significantly cheaper. The company employs over 3000 people in its agricultural and industrial operations.

"The engineered gearbox for this project is custom-built by TGM in Brazil, a WEG Group company, and is supplied with a WEG VSD and WEG electric motor as a package," says Magro. "The components in this solution are designed to deliver the specific torque required to crush the cane to the customer's specifications – reliably and efficiently."

In operation, the output speed of the gearbox is usually between five and seven revolutions per minute. To deliver the required rotating force, a 750 kW, 3 300 V WEG motor was specified, with a WEG VSD to facilitate speed variation. Magro explains that the volume and quality of cane being brought in from the fields to the mill varies during the harvesting season – usually from April to October or November – so the rate of crushing in the mill needs to be adjustable.

The TGM third-generation planetary gearbox is designed specifically for sugar cane mills, where torque variations are constant and robust construction is required. The

bearings are designed to achieve more than 100 000 hours of operation. This means the equipment can run for up to 10 years before any major service intervention is required.

"WEG has supplied efficient and reliable equipment to Green Fuel since the beginning of its operation. During its plant expansion from 2017 to 2018, we supplied a planetary gearbox, motor and VSD for mill Number 1," he says. "Our current contract is for a second expansion, where Zest WEG will supply similar equipment to mill Number 6."

While the gearbox is manufactured and assembled in Brazil, the WEG VSD with integral transformer will be assembled in South Africa by Zest WEG. The transformer will step down power from 11 kV to the required motor voltage of 3.3 kV. Following delivery by year-end

and the earlier delivery of the high efficiency motor supplied earlier last year from WEG in Brazil, on site installation will be conducted as early as possible in 2021, over a period of about two weeks. Zest WEG will be involved in the installation supervision and commissioning, which includes the required tests before the start-up.

"We also assist with the start-up of the equipment at the beginning of the crushing season, to ensure that everything is running optimally," Magro says. "Using several production facilities around the world, Zest WEG provides integrated solutions to customers in Africa that combine the highest quality equipment with our in-depth industry expertise," he concludes.

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The TGM planetary gearbox and WEG motor at Green Fuel in Zimbabwe.