

# Fast payback on steam cogeneration

Fast payback on steam turbine cogeneration systems makes this technology an attractive option across numerous industries. This is according to Zest WEG Group's Leandro Magro, who says that any industry with a boiler installed has cogeneration potential using a steam turbine.

**F**ast payback on steam turbine cogeneration systems is often an attractive option, says Leandro Magro, manager steam turbines at Zest WEG Group, who explains that any industry with a boiler installed has the potential for cogeneration using a steam turbine. "The electricity cost savings usually pay back the investment in less than three years, but this payback period can be further reduced depending on the applicable electricity price tariff in effect," he says.

Power plants, sugar mills, pulp and paper mills, steel mills, petrochemicals, oil and gas installations, food and beverage manufacturing operations and many other industries, including commercial and institutional facilities, use steam turbines for electricity production or to drive mechanical equipment such as compressors, fans, mills and blowers.

When used for the production of electricity, the steam turbine is coupled to a generator, which is commonly referred to as a steam turbo generator set. Magro says that typically, industrial steam turbine models start from a 30 kW capacity and go up to 150 MW. "These turbines can operate at a very low steam pressure (5.0 bar or less) or a high steam pressure of up to 140 bar, and with saturated or superheated steam at up to 540 °C," he says.

"The operational availability of an industrial steam turbine should be about 98%;

however a proper maintenance programme is essential, not only for prolonging the life of the equipment but also to ensure the correct operation of the turbine," Magro says.

The best way to achieve this is to enter into a service contract with the OEM who will recommend an appropriate maintenance and service programme. A new steam turbo generator set could be installed in the plant to operate in parallel with the pressure reducing

valve, so when maintenance is required on either the valve or turbine, the processes that require steam would not need to be stopped.

"Steam turbine cogeneration is not only suitable for large installations but can play a vital role in medium and small applications, saving the end-user a significant amount in energy costs over the expected life span of the system which, depending on design, can vary from 20 to 30 years," Magro concludes. □



*A backpressure steam turbo generator running with saturated steam, producing 100 kWh electricity to the plant.*



*A turbo generator installed in a paper mill in South Africa.*