

Protecting Landfill Gas Engines

Spinner II® Centrifuge Dramatically Increases Run Times



Scenario

Landfills around the world are tapping into a valuable fuel once flared off as a nuisance – biogas. The by-product of naturally decomposing organic matter, biogas burns easily in natural gas engines to create heat and electricity. Unlike natural gas, however, biogas contains many impurities that must be removed before it can serve as a fuel. Operating requirements for the engines differ as well, with biogas engines expected to operate 24/7 at high performance. Oil change frequencies for biogas engines are much shorter than those for natural gas engines, due to contaminants in biogas and the high load factors on the engines. As a result, any technology to help maintain clean oil and extend drain intervals will have a great impact productivity and cost-efficiency.

In Auckland, New Zealand, the country's largest landfill operates a large scale waste-to-energy project. The project uses nine Jenbacher J320 Landfill Gas Engines. The landfill takes industrial, chemical and hospital waste, so the gas collected contains high percentages of impurities. In the past, the engines could run at most 400 hours before total acid number (TAN) number rose and total base number (TBN) dropped to unacceptable levels. Attempts to control acid levels resulted in increased levels of silica and high wear rates.



Jenbacher J320 Landfill Gas Engine



Spinner II Model 3400 centrifuge test unit



Spinner II Model 3600 with pump and motor

Solution

Oil Conditioning Systems NZ Ltd, the authorized distributor of Spinner II® oil-cleaning centrifuges in New Zealand was called in to provide assistance. Under the direction of Kelvin Hieatt, Managing Director, a trial was conducted on one of the Jenbacher engines using a Spinner II Model 3400 centrifuge powered by a dedicated pump and motor. The centrifuge, which processes up to 30 L/min (8 gpm), cleans a sidestream of oil and returns it to the sump.

Waste captured by the centrifuge after 600 hours of operation



Results

A total of four trials were run, proving that using the Model 3400 Spinner II centrifuge increased the life of the oil and filters by approximately 75%. Landfill officials determined that the ROI for the system would be 7 to 10 months. Results would improve with the higher-capacity Model 3600 centrifuge, which cleans up to 60 L/min (16 gpm).

The landfill owner installed nine Model 3600 Spinner II centrifuges, with plans to add more at other landfill sites. With this centrifuge, oil and filter life increased 100%. The owner is also adding other Spinner II centrifuge models to protect engines on mobile equipment at the facility.

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SPINNER II® Oil-Cleaning Centrifuges