

Customer Testimonial



Monolec® GFS Engine Oil (8440)

City of Ithaca Wastewater Treatment Facility – New York

G342 CAT 225 HP Engines

- **Reduced contamination**
- **Extended oil drain intervals by 100%**

Customer Profile

The City of Ithaca Wastewater Treatment Facility serves the needs of the Ithaca, New York area. The plant is run by Grade 1A operator, Gary Gleason; assisted by Ron Denmark and is maintained by another Grade 1A operator, Edwin F. Smith. LE lubrication consultant, Don Wilkens, services the account.

Application

In the process of treating wastewater, sludge is digested and produces a gas commonly called "digester gas" or "bio-gas". This gas can be burned off, or in the case of the Ithaca Wastewater Treatment Plant, be recovered and used as a fuel. This fuel is used to drive two G342 Cat 225 hp engines, which are used in the cogeneration process. Cogeneration is a term, which refers to the process of recovering and using waste heat produced during power generation. These engines drive generators that produce electricity used by the facility, provide heat from combustion for their buildings and provide heat to the sludge digesters.

Cogeneration is being accepted in general industry because it makes more efficient use of available energy. For example, approximately 28 percent of the total energy value of fuel to an engine is used to develop horsepower. The remainder is lost in the water jacket, exhaust and radiated heat. With a cogeneration system, approximately 52 percent of the total heat input is recovered, making the total input energy used 80 percent.

Challenge

Both G342 Cat engines are equipped with dual fuel carburetors, which allow them to run on natural gas or bio-gas. They are run on bio-gas approximately 24 hours per day, depending on the season. Bio-gas is a readily available "cheap" fuel source. There are drawbacks to bio-gas. Only 60-65 percent of bio-gas

is combustible methane; the remainder is inert carbon dioxide. Bio-gas also contains elements like silicon and hydrogen sulfide which accumulate in the engine and cause wear on the soft metals such as copper and lead.

After purchasing the Caterpillar engines about 12 years ago, the Ithaca WWTP ran two different commercial grade engine oils. Through oil testing, they determined that after running the engines for 250 hours (90 percent of which they were using bio-gas), the oil was beyond its useful life. At 3,500 hours on the engines, they determined that a commercial grade oil could not last beyond 250 hours of burning bio-gas.

LE Solution

After consulting with LE lubrication consultant, Don Wilkens, and the local Caterpillar representative, they decided to clean the engine sumps and refill them with Monolec® GFS Engine Oil (8440) SAE 40 weight. At 750 hours, an oil analysis determined that the LE oil was in excellent condition to continue doing a superior job of reducing friction and wear. Oil samples were taken every 350 hours and it was decided that Monolec 8440 could go up to 1000 hours (depending on the fuel), and an estimated 1500 to 2000 hours on natural gas with the oil still suitable for use.

Results

The superior wear protection and cleaning ability of Monolec 8440 is extremely important for keeping the G342 Cat engines online. Since converting to Monolec 8440, the one unit that runs 24 hours per day has seen a reduction in contamination in the oil analysis and an increase of 100 percent in the drain intervals. All of this combines to give longer useful life and lower maintenance costs in running the two engines in twelve years of service.



With 18,682 hours on unit #1, a scheduled teardown was performed. The results of this teardown were minimal wear on internal components, bearings, rings, pistons, etc. It was determined by an independent representative that this unit could have gone a minimum of another 8,000 hours without problems with the internal components. Monolec 8440 is formulated for heavy-duty service in diesel and gasoline engines. It is made from select paraffin base oil and contains Monolec, LE's exclusive wear-reducing additive.

The units have an estimated 56,000 hours per unit on them, equal to 112,000 hours total (12 years of on-line time). The plant has been on-line for approximately the same amount of time with only minor problems on downtime. The scheduled overhaul is 10,000 hours and rebuilding at 30,000 hours. The normal rebuild is 20,000 hours.

Thank you to Gary Gleason, Ron Denmark, Edwin F. Smith, and to Don Wilkens, LE lubrication consultant (pictured), for providing the information used in this report.



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