

Success with Castrol Optigear 1100 in Waste Treatment Plant Gearboxes

Recycling and Waste Management (USA)

Water Treatment Plant Gearboxes

Castrol Optigear® 1100 gear oil

ANNUAL SAVINGS: \$49,100



THE SITUATION

The major utility authority in Florida provides reliable water, wastewater, and sanitation services. They had to change oil in 28 gear drives (15 gal capacity avg) each year based on oil sample reports which indicated significant oil oxidation, severe amount of sludge, and presence of water.

Annually, they were using 9 drums of commodity gear oil at a cost of \$8,100. Degraded oil caused high working temperature (170°F+), premature gear wear, and high vibration. Three (3) gearboxes failed each year and were replaced at an average cost of \$15,000 each. The annual labor cost due to oil changes and gearbox replacement was \$20,000 (2 people for 60 hrs at \$50/hr + crane rental for 7 days at \$2,000/day).

BEFORE

- Gear oil cost (8 drums) = \$8,100 per year
- Gearbox cost - \$15,000 x 3 = \$45,000 per year
- Labor cost = \$20,000 per year
- **Total annual cost = \$73,100**

AFTER

- Gear oil cost (11 drums*) = \$24,000 per year (*3 extra drums were bought for topping off)
- Gearbox cost - \$0 (no failures)
- Labor cost - \$0 (no oil or gearbox changes)
- **Total annual cost = \$24,000**

THE SOLUTION

Castrol was challenged to extend oil life, prevent gearbox failures, and reduce total maintenance cost. After investigation of the problem root cause, the following was concluded:

- Working temp was well above the acceptable range for the commodity oil, leading to rapid oxidation and degradation.
- The commodity oil had very low water tolerance in an environment with constant water contamination by rain and condensation.

Castrol Optigear 1100 high performance gear oil with high oxidation resistance and water tolerance was recommended.

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RECOMMENDATIONS

The previous gear oil was not capable of protecting gearboxes due to the low oxidation resistance, low water tolerance, and inadequate temp range.

The presence of the water and high temperature nearly triples the speed of oil oxidation in commodity oil, reducing useful life to less than one (1) year.

Castrol Optigear 1100 high performance gear oil was recommended to extend oil life, prevent gearbox failures, and to reduce total maintenance cost.

This oil is formulated with a unique patented blend of oil soluble additives which provide very low friction, excellent anti-wear & EP properties, and surface protection capable to extend gear life and significantly reduce temperature.

In addition, Optigear 1100 has a high water tolerance, large temp range, and excellent oxidation resistance.

CONCLUSION

The result after conversion to Castrol Optigear 1100 gear oil was \$49,100 in annual savings.

Working temperature was reduced from 170°F+ to 150°F-155°F. Vibration went away as well.

Oil analysis of Optigear 1100 gear oil indicated normal oil condition after one (1) year in service.

The service life of Optigear 1100 is expected to be a minimum of 3 years.

Estimated cost savings using Castrol Optigear 1100 gear oil for 3 years = \$147,300

Based on the excellent results of using Castrol Optigear 1100 gear oil at this plant, the customer decided to convert all gearboxes at another recycling facility in order to gain the savings there.



OTHER POTENTIAL APPLICATIONS

- Optigear 1100 high performance gear oil is the right lubricant for heavily loaded and shock loaded gearboxes, working in the most difficult conditions even with significant amounts of water present.
- It can be used in all mining, steel, cement, drilling, water treatment, and similar gear applications.
- Benefits include: reduced downtime, increased gear & bearing life, less labor time, reduced oil consumption, and lower waste oil.