

Optigear Synthetic 800 Eliminates Worm Gear Failures

METALS (USA)

Melt Shop and Caster Gear Drives

Castrol Optigear® Synthetic 800/1000 Gear Oil*

ANNUAL SAVINGS: \$256,970



THE SITUATION

A major steel producer was using a PAO-based gear oil in 15 Caster/Melt Shop worm gearboxes in the following applications: withdrawal rolls, straightener gearboxes, and oscillators.

Gearbox failures were a regular occurrence. On average, 10 gearboxes were rebuilt annually with substantial cost and time to repair.

BEFORE

- PAO gear oil with frequent gear failures
- Annual gearbox cost - **\$50,000**
(10 drives/year @ \$5,000 each)
- Annual replacement labor - **\$5,200**
(80 hours @ \$65/hour)
- Annual lost production - **\$200,000**
(10 gearboxes x 2 hours x \$10,000/hr)

AFTER

- Optigear Synthetic 800/1000 synthetic PAG gear oil
- No gearbox failures for 18 months after conversion
- Reduced oil usage worth an additional savings of **\$1,770**

THE SOLUTION

- Investigation indicated that gearbox failures were due to the current gear oil not meeting gearbox specs and not appropriate for working conditions.
- Previous gear oil contained EP additives which are aggressive to yellow metals and caused deterioration of the wheel material.
- The chosen viscosity of ISO 460 was too low for worm gears which require ISO 680 or 1000, especially given the high temps of 200°F.
- Optigear Synthetic 800 with synthetic PAG base oil was chosen to provide: the correct viscosity grade, improved performance at high temps, mild EP to prevent attack of the bronze wheel, and for its proven performance in worm gear drives.

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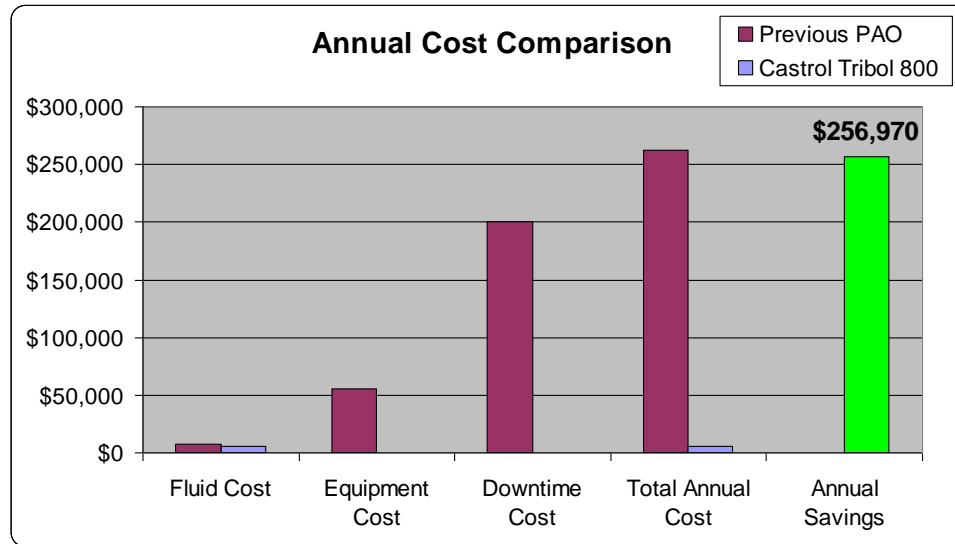
RECOMMENDATIONS

Castrol Optigear Synthetic 800 polyglycol (PAG) gear oil is very effective in reducing sliding friction of worm gears while not being aggressive to yellow metals. It is capable of working at sustained oil temperatures of 90°C/200°F with exposure to temperatures approaching 200°C/400°F. This is not possible with the previous PAO synthetic oil, in part leading to the failures.

CONCLUSION

The use of Optigear Synthetic 800/1000 has completely eliminated lubrication related failures of the castor worm gearboxes, saving the customer substantial costs for equipment, labor, and downtime.

The result is an annual savings of \$256,970.



OTHER POTENTIAL APPLICATIONS

Optigear Synthetic 800 utilizes a polyglycol base oil and mild EP additives which make it ideal for the extreme sliding of worm gear drives. In addition, it is well suited for any high temperature gear oil application where long oil and equipment life are desired.

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