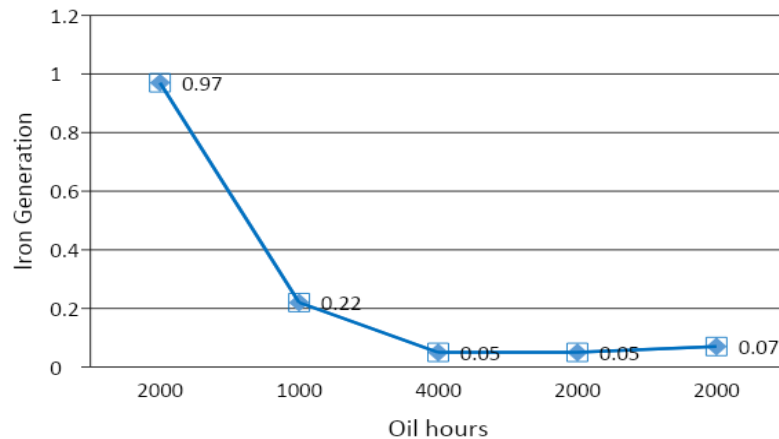


Case Study: Iron Reduction in a Mining Operation Final Drive with EXL-GearGuard TopOff.

EXLCanada Lubrication Ltd, EXL-GearGuard TopOff, enhanced by billions of spherical tungsten disulphide nanoparticles. These energy reducing, anti-wear, anti-friction and extreme pressure particles serve as submicron-sized shock absorbers, preventing exposure to hydraulic/shear pressures, and function as tiny ball-bearings that roll on impact, exfoliate and attached to surfaces, improving anti-friction and anti-wear properties of host oil **EXL-GearGuard TopOff** has shown consistent energy reduction rates, extends gear life and service intervals, improves power and torque performance. Compatible with mineral and synthetic oils. *Please note, this same spherical tungsten disulfide nanoparticle is used **EXL-GAS (gasoline engines) and EXL- DNG (diesel and natural gas engines) TopOff's** and the benefits shown are possible with these TopOff's when used as recommended in equipment/components for their intended use.*

Graphical representation of iron generation per hour before and after **EXL-GearGuard TopOff** addition. Sampling is for a mining operation final drive. 9000 hour time period.



- Point 1 (0.97) oil sample taken after 2000 operating hours on final drive oil, oil sample showed a rate of 0.97 grams of iron generation per hour, this is equivalent to 38 kg of iron over a projected 40,000 hour final drive life. It is assumed that failure would occur prematurely at this wear rate. Oil is then changed (same brand and grade) and **EXL-GearGuard TopOff** is included.
- Point 2 (0.22), oil sample taken 1000 hours after oil change, a 78% reduction in iron generation per hour. At this wear rate over a 40,000-hour component life represents generation of iron of 9 kg.
- Points 3 (0.05) and 4 (0.05) represent samples taken at 4000 hours and a further 2000 hours, for a total of 6000 hours at an iron generation rate of 0.05 grams per hour. Iron generated over the 6000 hours was 300 grams or equivalent to 2 kg over a 40,000-hour component life. A **reduction of 77%** from where there was no **EXL-GearGuard TopOff** in the oil.
- Point 5 (0.07), is a sample taken 2000 hours after an oil change with **no EXL-GearGuard TopOff added in the new oil**. It shows that iron generation is beginning to increase and **demonstrating the long-lasting benefits of the surfaces coated by exfoliated nano layers of spherical tungsten disulphide.**