

## CASE STUDY

### OPTIMIZING PERFORMANCE OF INDUSTRIAL LUBRICANTS AND EQUIPMENT USING COAT® SYSTEM TECHNOLOGY IN A COPPER MINE

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#### Introduction

Moving lubricants in and out of a subterranean mine is a costly and cumbersome endeavor. The inherent safety issue comes into play as critical equipment must work continuously at optimum efficiency.

#### Objectives

- Reduce the number of different lubricants used in the mine's various operations.
- To develop superior compressor, gearbox, and hydraulic fluids used in their mining operations.
- To develop an Oil Condition Monitoring program that would ultimately extend fluid life as well as the intervals between re-lubrication.

#### Lubricant Life Extension Technology

- The **COAT® System** uses Fourier Transform Infrared (FTIR) technology for the analysis of lubricants. It is capable of *detecting, determining, and replenishing* accurate levels of performance enhancing additives to their respective lubricants.
- Through real-time fluid monitoring, the service life of a lubricant may be extended by replenishing depleted additives before an irreversible degradation of the lube oil occurs.

#### Results and Discussion

Two mineral oil hydraulic fluids were replaced with a single fully synthetic product, **XL-7325/038**. In addition, five different mineral-based gear oils that were in use in the mine were replaced with a single fully synthetic product, **XL-7316/801**.

The following figures show that with proper Condition Monitoring using Thermal-Lube's **COAT® System** technology, the service life of these fluids has been extended from 1500-2000 hours to more than 25,000 hours.

Using the analytical diagnostic data feedback generated by the **COAT® System**, three specially designed synthetic fluids were formulated. The graphs below compare the overall service life of these three fluids with their conventional counterparts as used in the mine.

