APPLICATION
Air Compressors

Company Saves $20K+ in Energy Savings Pilot Program

CUSTOMER TESTIMONIAL
Large Manufacturer

CHALLENGE
Need for improvement of lubrication practices to enhance company's sustainability efforts

SOLUTION
Lubrication Reliability Program with:
- Monolec® Syn Industrial Oil (9046)
- Monolec® Centrifugal Compressor Oil (6260)
- Xamine® Oil Analysis
- Xtract® Filter Cart

RESULTS
- Saved $12,500 per year in energy costs
- Saved $7,939 per year by extending drain intervals from one to five years
- Achieved a five-fold reduction in waste oil disposal

Application

A large manufacturing company decided to do a pilot program on two of its largest compressors – a rotary screw compressor and centrifugal compressor – to see if they could create a more sustainable program for their facilities by modifying their lubrication practices. Pressurized air is used in an array of applications in the company's facilities; examples are hand-held air tools, drop hammers, chemical tank agitation and painting applications. In any manufacturing facility, compressed air is essential to ensure products are manufactured and fabricated per customer requirements.

Challenge

The company's air compressors were set to be drained annually, with no regard for condition of the oil. They were not set up on an oil sampling program, nor was the oil being filtered to keep out contaminants. The purpose of the company's initiative was to move to a predictive maintenance approach, optimize man-hours required to perform service, and select the best lubrication products for the air compressor applications in its plant. Effective implementation of lubrication reliability best practices can save energy, minimize maintenance costs by extending drain intervals, and improve reliability of the equipment.

LE Solution

LE advisors were called in to help the company set up the pilot program to test the results of an enhanced lubrication reliability

Results

- **Energy Savings** – The fluid friction difference between the old oils and the two new LE oils reduced the amp draw on each machine's motor. Based on amp draw results before and after the lubricant switch, the company estimated its annual energy savings for the two compressors as $12,500.
- **Oil Savings** – To compare the cost of the old vs. new compressor oils, we included the purchase price as well as drain intervals. Extended drain interval savings are due to no longer having to perform an annual drain, flush and refill process; savings were calculated based on a new five-year drain interval. Total annual oil savings for the two machines was $7,939.

effort. The first step was a study to analyze the relationship between types of lubrication and compressor energy consumption. The energy savings were quantified by using an Amprobe® device, which measures the amount of electricity flowing through the power lines to the machine. The meter was attached to the load side of the VFD (variable frequency drive) to have an accurate reading of how much electricity the compressor was using. The amount of electricity logged was converted to British thermal units (Btu). All variables that could affect the results of the study were taken into consideration.

Next, the classification of oil in use was evaluated and compared to the OEM's specifications. This led to a synthetic oil that was in use being changed to a mineral-based oil. After that, oil sampling was implemented and filtration ports were added. Sampling enables predictive maintenance based on when an internal component might fail or when the oil might lose its additive properties and need to be replaced. Through sampling analysis, filtration opportunities can be identified that will remove contamination to extend the oil life and avoid a costly annual DFR (eight man-hours per machine).

LE's specific recommendations, which the company adopted for the two compressors during the pilot program, were:

- Monolec® Syn Industrial Oil (9046)
- Monolec® Centrifugal Compressor Oil (6260)
- Xamine® Oil Analysis
- Xtract® Filter Cart with sampling ports

Results *(cont.)*

- **Waste Oil Reduction** – A total of 50 gallons of waste oil annually will not need to be discarded until the next DFR – estimated at once every five years – meaning the company achieved a five-fold reduction in waste oil being discarded.
- **Total** – Total savings, not counting waste oil reduction, amounted to $20,439 per year.

Compressor Lubrication Pilot Program at a Glance

Machine Type	Annual Amp Draw (Btu)	Annual Energy Savings	Oil Fill (gallons)	Annual Oil Savings	Total Annual Savings
Rotary screw	914 million	$4,500	35	$6,968	
Centrifugal	212 million	$8,000	15	$968	
Totals	1,126 million	$12,500	50	$7,939	$20,439

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