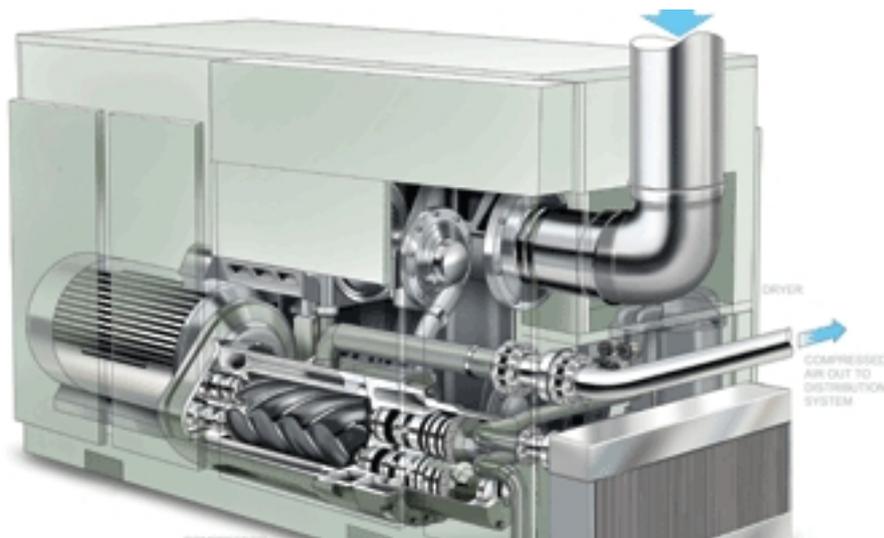


Protecting & Optimizing Your Air Compressors

Written by Jane Alexander, Editor, with Michael J. Hawkins, ExxonMobil Lubricants & Specialties
Friday, 09 July 2010 13:05



Count on synthetic lubricants to help you do it all!

Air compressors are everywhere. They're one of the most valuable and widely used power sources for industrial and commercial businesses in the world. Over the past decade, the marketplace for these workhorses has gone through a dramatic transformation. The need to improve productivity and lower costs has led to significant changes in compressor-component technology and designs, with leading manufacturers introducing increasingly advanced units that are more compact—*and more powerful*—than ever.

If your processes require air compressors, protecting and optimizing their performance should be at the top of your to-do list. Consider the following tips. They can help you ensure that your compressors deliver the reliability and performance your operations demand.

Protection and optimization start with the correct lubricant

In most industrial facilities and many off-highway applications, today's air compressors operate under extreme pressures and generate extremely high amounts of heat through adiabatic compression. (This is similar to the process used to ignite the fuel-air mixture in a diesel engine.) In these types of operating conditions, high-performance, fully synthetic lubricants offer a number of advantages over mineral-based products.

For example, Mobil Rarus SHC 1020 Series oils are formulated with an advanced base oil and a proprietary additive system that assures exceptional resistance to oxidation, enabling them to deliver long-lasting protection and reliability. By comparison, conventional mineral oils often

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break down when subjected to high-temperature conditions, leading to harmful deposits that can damage critical compressor components.

Use of synthetics results in a number of benefits, including...

- Cleaner compressors, which leads to longer running periods between maintenance intervals
- Enhanced oxidation and thermal stability, which minimizes sludge and deposit formation, even under extremely high and low temperatures, and extreme load conditions
- Higher load-carrying ability, which minimizes wear of bearings and gears
- Increased water separability, which reduces sludge formation in crankcases and discharge lines, as well as blockages of coalescers and inter- and after-coolers
- Improved rust and corrosion resistance, which protects internal components

ROI From Oil Analysis For most companies, quarterly oil analysis is recommended for both reciprocating and rotary screw compressors. Such testing should be used to identify the condition of the in-service lubricant, as well as the presence of any wear metals indicative of a potential developing failure. The presence of any harmful contaminants, such as dirt, water and/or coolant, should also be identified. According to ExxonMobil, its Signum Oil Analysis Program is an advanced, online oil-analysis service that lets users register equipment, specify tests, print out labels required to send samples to ExxonMobil laboratories for analysis, and then download results, all from the convenience of their computers.

More protection and optimization "must-dos"

Check for air leaks. You've heard it before: Running a compressor with air leaks is like driving a car with the emergency brake engaged. It wastes energy, reduces output capacity, shortens equipment life and increases maintenance costs. For example, the air leaking from a typical 1/8" hole consumes about one horsepower of energy.

Keep operating pressures at the minimal requirement. This is best accomplished by identifying the maximum application-pressure requirement of the system. To this, add the conveyance pressure loss, as typically about 5 psi are required to move air from the compressor to this application. The sum of these two pressures should be the pressure setting of the receiver tank. For example, if the maximum system application pressure requirement is 75 psi, then the receiver tank should be maintained at 80 psi. Only minor adjustments should be necessary to fine-tune this set-point.

Similar to air leaks, running at excessively high pressures results in shortened compressor and component life, along with increased maintenance and repair costs. Increased pressures also

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result in increased heat, which can significantly shorten the life of compressor lubricants, requiring frequent oil changes. (For every 2-psi reduction in operating pressure, there's about a 1% increase in efficiency.)

To get the most out of your compressor, make sure that intake air filters are routinely replaced and that all induction air piping and manifolds are tight and leak-free. Periodic white-glove inspections of all induction-piping surfaces should be performed to validate that internal surfaces are maintained dust-free. The source of any dirt or deposits found should be immediately traced back to the point of origin and repaired. **MT**

Understanding Lube Compatibility

Many compressor manufacturers offer their own line of lubricants. These are often supplied under private-label agreements with lubricant manufacturers and blenders. These products are engineered to promote optimal equipment performance, as well as to be compatible with the materials used for internal components like seals and hoses.

Before changing lubricants, it is important to consider the new product's compatibility, not only with the materials of the compressor's components, but with the previous lubricant used in the unit. The new lubricant's formulation and performance can be compromised if it is not compatible, potentially resulting in increased component wear, accelerated instances of oxidation, degradation of additives and elevated particle count.

Since lubricants are engineered with complex chemistries, maintenance professionals are advised to seek the technical advice of an expert lubricant supplier with an in-depth knowledge of compressors. This type of expert will be able to provide data about compatibility testing and instructions for the proper flushing procedures to help promote a smooth conversion.

A 17-year veteran of ExxonMobil, Mike Hawkins is the global brand manager for the company's flagship Mobil SHC brand of high-performance synthetic lubricants.

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