

Face-to-Face



Boosting Steel Productivity

A Guide to Proper Grease Selection for Optimizing Equipment Performance

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Today, industrial equipment manufacturers are increasingly designing new equipment that is extremely compact and operates at higher temperatures and pressures than ever before. As a result, maintenance professionals in the steel sector can benefit greatly from learning more about how to choose the right grease that will deliver the performance they need to protect their equipment over the long haul.

In an exclusive interview with Steelworld, Dr. Ian Davidson, Global Industrial Marketing Manager - ExxonMobil Lubricants & Specialties Company provides some background on how greases are formulated and how steel companies can help ensure that they choose the right grease for their needs.

Excerpts:

- Dr. Ian Davidson

In what applications is it more appropriate to use a grease rather than a lubricating oil?

- An easy way to think of grease is to consider it like a sponge soaked with lubricating oil. Upon application of external stresses, the thickener (sponge) releases the oil to lubricate the mechanical parts; when the stress is removed, the thickener re-absorbs a portion of the released oil for later use. Typically, greases are applied to mechanisms where a lubricant cannot stay in position or re-lubrication is infrequent, difficult, or just plain not economical.

These include electric motors, home blenders, and automotive wheel bearings, just to name a few. This requirement may be due to the physical configuration of the mechanism, type of motion, type of sealing, or the need for the lubricant to perform all or part of any sealing function in the prevention of lubricant loss or entrance of contaminants. Because of their solid nature, greases do not perform the cooling and cleaning function associated with the use of a fluid lubricant. With these exceptions, greases are expected to perform all other functions of a fluid lubricant.

How can greases help maximize application performance within high operating temperature environments, such as a steel mill?

- Maintaining the productivity of a steel mill requires greases that can withstand the severe operating conditions, delivering maximum protection. This includes extremes of temperatures and a high level of water tolerance. Another critical factor of a good steel mill grease is controlled oil release under extreme conditions. Maintaining oil control, releasing just the right amount of oil to lubricate, when needed, is a hallmark of a superior steel mill grease. To ensure effective steel mill operation, a grease must be able to withstand these conditions and be able to provide lasting lubrication. Steel mill greases are typically required to withstand not only high temperatures, but also extreme environmental conditions, such as high levels of water and other contaminants.

What grease based technologies offered by ExxonMobil are suitable for applications operating in a steel mill?

- We offer a comprehensive range of greases that are each expertly formulated to meet the demanding operating conditions often found in steel mills. These products include:

- **Mobil SHC Polyrex™** – a family of high-performance synthetic bearing greases that are capable of delivering exceptional equipment protection even under temperatures as high as 170 degrees Celsius (nearly 340 degrees Fahrenheit).
- **Mobilith SHC™** – synthetic high-temperature

greases for use in plain and rolling element bearings, kiln roller bearings and in slag transfer rail car bearings, grease filled industrial gear cases subject to high temperatures, where conventional semi fluid greases will not provide acceptable lubricant life and in non-driven, heavy-duty truck trailer wheel hubs.

- **Mobil Centaur XHP™** – a family of calcium sulfonate greases that deliver a balanced combination of water washout and water spray-off resistance, as well as excellent corrosion protection in these severe wet environments, making them ideal for steel and mill equipment.

- **Mobilgrease XHP™** – multipurpose lithium complex greases developed for a wide variety of applications and severe operating conditions common in the steel sector.

In addition to our comprehensive lineup of greases, we offer a range of valuable services to our customers to help ensure they can fully realize the benefits our products offer and, equally important, so they can help avoid common issues, such as over-greasing and under-greasing, etc.

ExxonMobil engineers have the technical experience and skills to help our customers maximize their productivity, reduce maintenance costs and increase the operational efficiency of their equipment.

Our range of planned engineering services (PES) includes:

- Lubricant/grease evaluation and audits;
- Inventory management recommendations;
- ExxonMobil's proprietary online Signum used oil analysis program;
- Hydraulic system inspections;
- Grease training on application and use; and,
- Centralized grease system analysis and optimization

How can the use of high quality greases help to improve health and safety within a steel mill?

- We specifically design our iron and steel mill oils and greases to meet or exceed industry and original equipment manufacturers' expectations. Our products are thoroughly tested before they are commercialized, and as a result, they are formulated to meet global quality standards and are compliant with rigorous ExxonMobil management systems for manufacturing, customer service, laboratories, safety, health, and the environment.

For companies in the steel sector, our lineup of Mobil-branded greases is designed to deliver a number of key benefits. These include helping to increase equipment operating efficiency, potentially reduce energy and resource use, and extend oil life. As a result, companies can benefit in several ways. On the financial side, improved productivity can translate into increased bottom line benefits. From

the operational side, increased equipment uptime can help translate into longer equipment life.

From the health/safety side, using appropriate Mobil-branded greases that deliver long-lasting performance can help minimize oil consumption and reduce the amount of time maintenance personnel need to conduct oil changes. All of these benefits go hand-in-hand. And that's why ExxonMobil works so closely with the world's leading equipment manufacturers. To ensure our greases deliver the optimum performance for their intended applications and that we deliver the highest level possible of application expertise.

What issues are associated with grease compatibility? Do companies need to take extra precaution when switching greases?

- This is a common question that our engineers and technical experts are asked about. Mixing different types of greases can sometimes lead to incompatibility problems. Grease incompatibility results from chemical interactions between the thickener or additive systems of the dissimilar greases. In some cases, grease incompatibility can lead to equipment failure or damage of the lubricated components. The first manifestation of grease incompatibility relates to grease consistency. Mixtures of incompatible greases typically exhibit a change in consistency shortly after mixing, either as excessive hardening or softening relative to the consistency of the individual pure greases.

Mixtures of incompatible greases will exhibit excessive hardening or softening relative to the consistency of the individual pure greases. The hardening or softening tendencies of the mixture will generally become more pronounced as the operating temperature increases, or as the rate of shearing on the grease mixture increases. Incompatible greases may also exhibit excessive oil separation or "bleeding" tendencies at higher temperatures. Secondly, additive interactions and incompatibilities may take longer to manifest themselves, but can also lead to equipment failure when expected grease performance is compromised.

When changing from one type of grease to another, it is always prudent for companies to reach out to a trusted lubricant supplier, like ExxonMobil, that offers a wide range of product choices and the critical application expertise. Working with a trusted, well-known lubricant supplier, like ExxonMobil, can help ensure that companies get the right product for their application and that they have the technical support needed to accomplish a flawless grease change, minimizing the chance that incompatible greases will be mixed.