

Keep Kiln Turning with Proactive Lubrication Program

Kiln maintenance can be extremely difficult in cement, limestone, petroleum coke, and silica dust plants because of the harsh conditions associated with these industries. Lubrication Engineers has a long and successful track record providing solutions for the many lubrication-related challenges kiln operators encounter, such as heavy loads, temperature extremes, moisture, and particulates.

A proactive approach to kiln lubrication using a proven program can yield significant cost savings and help avoid unscheduled shutdowns. Lubricant selection is of primary importance, followed by putting in place lubrication reliability products and best practices to



maximize the performance of the lubricant and protect the equipment. The right program will increase uptime; reduce gear and kiln wear; maintain kiln creep; lower lubricant consumption, waste disposal, and energy use; and contribute to a safer, cleaner work environment.



Lubrication Program Best Practices for Kilns

1. Lubricate the kiln's wear pads and tire bore using solid lubricant bars or spray grease.
2. Select the best trunnion bearing lubricant to mitigate overheating, carbon buildup, and metal-to-metal contact.
3. Implement an oil analysis program for gearboxes.
4. Select the right high-performance gear oil for use in the gearbox.
5. Implement a gear oil filtration program to 17/16/13 cleanliness code.
6. Select the right high-performance open gear lubricant to maximize gear set operation and lifespan.

Components of an Effective Kiln Lubrication Program



Solid Bar Lubricant



Oil Analysis



Gear Oil



Filtration Program



Open Gear Lubricant

Identify the suffering points

Move forward with proven solutions for extending equipment life



Kiln Wear Pad Erosion, Excessive Creep & Refractory Brick Loss

As the kiln rotates, the tire cradles the free-moving shell, resulting in immense pressure, severe friction, and metal wear. To mitigate potential damage, sacrificial wear pads protect the surfaces from each other. If the creep – the movement between both surfaces – goes beyond originally designed-for measurements, it indicates insufficient lubrication and can lead to metal-to-metal contact and erosion of the wear pads. Potential damage includes scoring, galling and cold welding of the kiln tires, wear pads and stop blocks, as well as loss of refractory brick.



LE Solution: Appropriate tire lubrication will ensure that creep is maintained by preventing the wear pads and shell from adhering to the tire. Easy Bar® with Almasol® brings together the wear-reducing benefits of LE's proprietary solid EP additive, Almasol, with the proven benefits of Easy Bar solid lube bar technology. The bar's patented blend of lubricants is suspended in a solid polymer binder that melts at approximately 49°C (120°F). The auto-ignition point of the bar is 538°C (1,000°F), which prevents dangerous flame-ups. When the bar is placed between the tire bore and shell, the binder melts, and the rolling action of the kiln distributes the lubricant where it's needed to protect the surfaces and maintain creep.



Trunnion Bearing Overheating & Wear

Trunnion support roller bearings help carry the weight of the kiln and assist in rotation. Common challenges are severe unbalanced loads, overheating, metal-to-metal contact, lubricant starvation, and contamination. These can lead to excessive carbon buildup, bearing scuffing and pitting, and damage to the shaft.



LE Solution: Monolec® Syn Industrial Oil was designed to prolong equipment life by combatting the effects of high temperatures, contamination and heavy loads. It is formulated with high-viscosity synthetic base oil and an additive package that provides outstanding thermal stability, rust and oxidation resistance, and wear resistance.



Gearbox Oil Foaming, Overheating & Emulsification

Some gear oils foam and lose performance in the presence of moisture. Some are not able to maintain film strength when subjected to heavy loads, air or high temperatures. In this way, inferior or incorrect gear oil can lead to unnecessary wear and unplanned downtime. While OEMs recommend the viscosity and whether an EP package is needed, other properties are often ignored. Thermal stability, oxidation resistance, demulsibility, resistance to foaming, friction reduction, shear stability, tackiness, and film strength stability are all critical factors for gear oils.



LE Solution: Work with your local LE lubrication consultant to choose the Duolec® high-performance gear oil best suited to your application. LE's Duolec gear oils are designed to combat the effects of high temperatures, water, contaminants and heavy loads. These superior quality oils will maximize equipment life.



Open Gear Wear

Open gears experience high-load, heavy-shock conditions and a dusty environment that can lead to surface wear like scoring, pitting and spalling. An inferior lubricant will not stand up to the extreme conditions. An extremely tacky lubricant with high film strength is needed.



LE Solution: Heavy-duty synthetic Pyroshield® Open Gear Lubricants exhibit exceptionally high film strength to provide outstanding protection for high-load, heavy-shock applications. Formulated specifically for open gear applications, they cling tenaciously to metal surfaces without accumulating; prevent metal-to-metal contact; and, in most cases, reduce gear temperatures.



Cement Kiln Lubricant & Reliability Recommendations

Primary Gearbox

- Duolec® Industrial Gear Lubricant
- Duolec® Syn Gear Lubricant
- Xamine® Oil Analysis (Basic Ind. w/ PQ)
- Xtract® Standard Filter Cart
- Xtract® Gearbox Adapter Kit
- Xclude® Breathers

Trunnion Bearings (Oil-Filled)

- Monolec® Syn Industrial Oil
- Xamine® Oil Analysis (Advanced Ind.)
- Xtract® Standard Filter Cart
- Xtract® Hydraulic Adapter Kit
- Xclude® Breathers
(if circulating system is present)

Trunnion Bearings & Seals (Greased)

- Almaplex® Ultra-Syn Lubricant
- Xport® Clear Grease Guns
- Xport® Lock-On Grease Coupler
- Xport® Single Point Lubricators

Open Gears (Girth & Pinion)

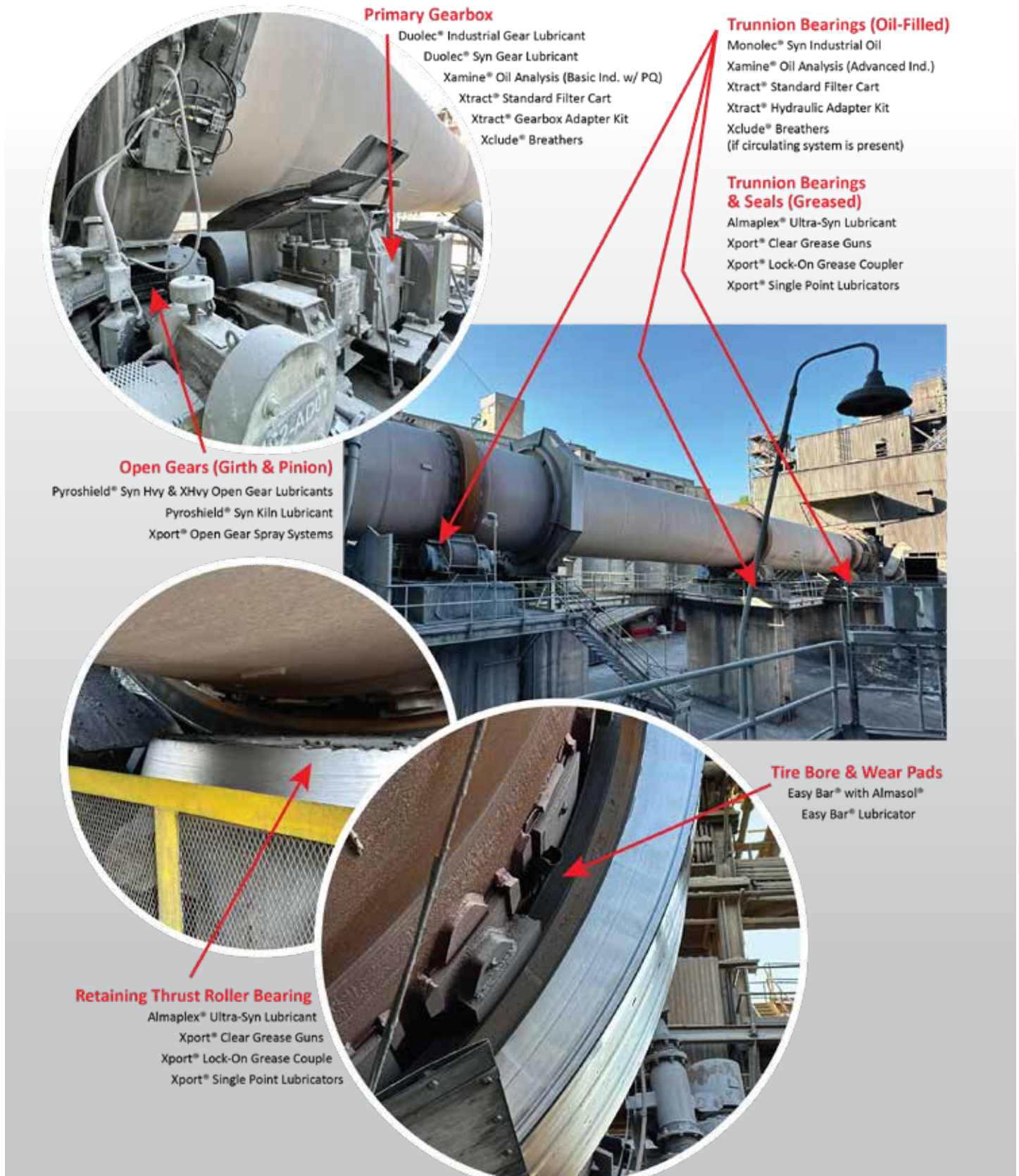
- Pyroshield® Syn Hvy & XHvy Open Gear Lubricants
- Pyroshield® Syn Kiln Lubricant
- Xport® Open Gear Spray Systems

Retaining Thrust Roller Bearing

- Almaplex® Ultra-Syn Lubricant
- Xport® Clear Grease Guns
- Xport® Lock-On Grease Couple
- Xport® Single Point Lubricators

Tire Bore & Wear Pads

- Easy Bar® with Almasol®
- Easy Bar® Lubricator





LE's state-of-the-art manufacturing facility, technology center, warehouse and primary office is located in Wichita, KS, with regional distribution out of Tennessee and California. Additional support functions are located in Fort Worth, TX. The company's international presence includes distributors in more than 60 countries.



LE Helps Protect Your Equipment & Grow Your Bottom Line

Leaders in Lubricants Since 1951

Does your lubricant supplier do all of this?

- ✓ Professional, onsite equipment reliability assessment
- ✓ Comprehensive lubricant line (industrial oils, engine oils and greases)
- ✓ Web-based oil analysis, with results reviewed by experts
- ✓ Storage systems, including stackable bulk units
- ✓ Visual identification, including tags, labels, color-coding and wall charts
- ✓ Handling and transfer equipment, including portable transfer containers, clear grease guns, grease pumps and lube reels
- ✓ Single- and multi-point automatic grease lubricators and lubricating systems
- ✓ Contamination exclusion and removal tools, including oil reservoir sight glasses, desiccant breathers and filtration equipment
- ✓ Local, factory-trained specialist available 24/7



Lubrication Engineers, Inc. is the total solutions provider for lubrication reliability. We work closely with our customers to learn about their specific equipment and lubrication needs, and then help them create a world class lubrication reliability program that provides equipment protection and enhanced profits.

We start with an onsite equipment assessment. A trained, local lubrication consultant provides a detailed report recommending lubricants, application methods, usage amounts, and drain or lube intervals.

LE's line of high-performance lubricants – manufactured in the U.S. and made of highly refined base oils and proprietary additives – far exceed the performance of conventional lubricants in a wide variety of industrial and automotive applications. In addition, your LE consultant can offer you several other best practice products and services to ensure the effectiveness of your program, including solutions for oil analysis, storage, handling and transfer, contamination exclusion, contamination removal, education and training.



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