

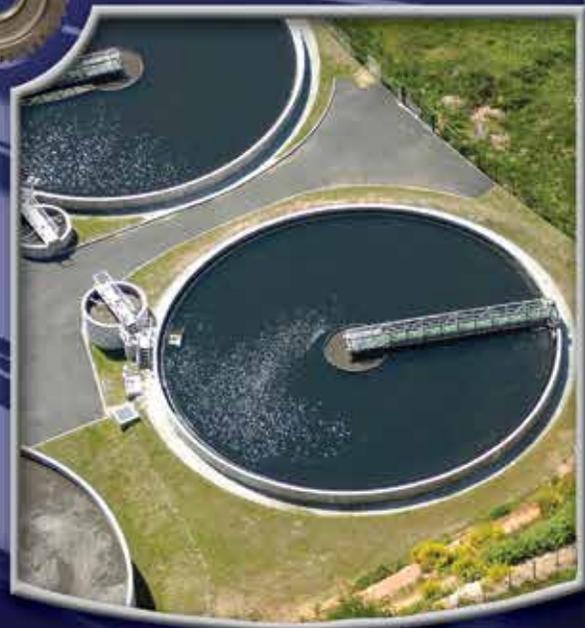
The Lubrication Reliability Source™



LUBRICATION
ENGINEERS, Inc.

Water & Wastewater
TREATMENT

800-537-7683



Got lubrication challenges?

To maximize your benefits, use

Prevention is always the best solution. It is easier and more cost-effective to put clean lubricant into your machinery and keep it clean and dry than it is to remove water, particulate matter and other contaminants after they've gotten into the lubricant. In the real world, however, a multipronged approach that includes both prevention and removal is needed. We've identified four of the most common problems that arise at water and wastewater treatment facilities, along with our recommended solutions.

Contamination

In water and wastewater treatment facilities, the vast majority of lubricant contamination comes from water. However, dust, dirt, process chemicals and cross-contamination are other sources of contamination that can create problems with equipment.



LE Solution

A comprehensive lubricant reliability program that includes the right lubricant, the appropriate reliability tools and training for key personnel is the best way to prevent contamination.

- **Lubricants** are the lifeblood of your equipment. It is of vital importance that the right lubricant be used for each application. With their highly refined base oils and proprietary additives, LE's enhanced lubricants deliver superior performance over conventional lubricants.

- **Reliability tools** for storage, transfer, filtration and application help you keep lubricants clean and dry from the moment you receive the lubricants at your facility until the end of their useful life in your equipment.

- **Oil analysis** helps you monitor the condition of the lubricant, ensuring that maintenance is performed at appropriate intervals.

- **Training** personnel on the proper procedures will ensure that best practices are followed at all times.

Rust & Corrosion

Many components are subject to rust and corrosion because of the constant presence of humidity and moisture throughout the facility.

In gearboxes, humid air and temperature changes lead to condensation in the headspace, which over time can cause rusting. Metal flakes form, fall into the oil, circulate, get into the bearings, and eventually can cause extensive damage. The rust can also promote oxidation and emulsification.



LE Solution

- **Lubricant quality** is crucial for protecting critical components such as bearings and gears.

- The **viscosity of the base fluid** should be chosen specifically for the application. A sufficient viscosity ensures a strong hydrodynamic film that will transport rust particles out of the contact zone. The viscosity must be maintained, even in the presence of water and high temperatures, or the integrity of the film will suffer.

- **Rust and oxidation inhibitors** are essential for preventing rust and oxidation in the first place.

- **Filtration** can be used to remove the rust particles from the lubricant after they have been carried away from the contact zone.



Quality Matters

High-quality lubricants – chosen wisely and cared for properly for each piece of equipment – can prolong equipment life as well as reduce energy consumption, downtime and lubricant costs.

Challenges? Let LE help.

Use multipronged approach.

Water Ingression

Condensation inside gearboxes and pumps is a common problem that leads to costly downtime and repairs. This could be caused by direct impingement, by moisture in the air that is breathed into the equipment due to temperature changes, or by loss of integrity in the seal.

LE Solution

- **Desiccant breathers** remove moisture from air as it is breathed in and out.
- **Sight glasses** show if water is present in the reservoir and – if so – allow easy drain-off.
- **Filtration** is recommended for gearboxes that are critical to the operation.
- **Lubricants with demulsibility characteristics** keep water separate from oil so it can be removed.

Each of these solutions helps to an extent, but it is the synergy of all four together that will maximize your benefits.

For example, a sight glass that allows you to drain the water only works if you have a good lubricant that keeps the water separate from the oil. On the flip side, even the best oil can only fight emulsification for so long if there are no efforts to prevent or drain off the water.



Water Washout

The function of certain components (such as gears, bearings, chains and cables) requires them to be in frequent contact with water. Some commercial quality lubricants are either removed or weakened by this exposure to water.

LE Solution

- **Water-resistant lubricants** such as LE's will adhere better to metal because they are formulated with water-resistant polymers and/or thickeners. It is also important for lubricants in frequent contact with water to be able to shed or tolerate water without dramatically losing their original lubrication performance properties.
- **Clear Grease Guns** make it easy for you to know which grease you're using for each application, eliminating the possibility of the wrong grease being applied or two different greases being mixed.
- **Training** ensures that your personnel know the proper storage, handling and application procedures for your greases and other lubricants. LE will train your team onsite at your convenience.



What challenges are you facing?

No matter what reliability challenges you are experiencing, LE has the expertise, products and services to create the best solutions for you. There's no need to go it alone when you can contact your local LE consultant for help today.

800-537-7683 • www.LElubricants.com



Equipment Reliability Assessment

Maximizes equipment life, reduces downtime, consolidates lubricant inventory

- Professional onsite assessment of all equipment requiring lubrication
- Detailed report recommending lubricants, application methods, usage amounts, and drain or lube intervals
- Recommendations also include reliability solutions for transfer, contamination exclusion, contamination removal, education and training.

Enhanced Lubricants

Reduce friction and wear, enabling equipment to operate longer and more efficiently

- Technologically advanced oils and greases
- Proprietary, high-performance additives
- Selected to meet needs of specific applications

Oil Analysis

Establishes optimum drain intervals and detects wear or contamination before it damages equipment

- Comprehensive program for routine monitoring of oil performance and equipment conditions
- Fast, accurate, online reporting and expert explanation of results
- Sampling valves and other equipment for ensuring consistent oil samples

Storage

Ensures clean and organized lube rooms, worker safety and consistent lubricant quality

- Storage systems to ensure oil cleanliness, inventory control and application efficiency
- Color-coding and ID tags to prevent misapplication and cross-contamination

Equipment Reliability Assessment



Design, Implementation & Support



Education & Training



Enhanced Lubricants

Protect Your EQUIPMENT

with LE's Full Circle of Reliability

Contamination Removal



Contamination Exclusion



Protect Your Equipment

Lubrication Engineers will work closely with you to learn about your specific equipment and lubrication needs. Only then can we create an effective lubrication reliability program that will provide the equipment protection and enhanced profits you are seeking.

This starts with an onsite assessment of all equipment requiring lubrication. A trained, local LE lubrication consultant will provide you with a detailed report recommending lubricants, application methods, usage amounts, and drain or lube intervals. In addition to LE's comprehensive line of premium lubricants, your LE consultant can offer you all of the other reliability products and services shown here to ensure the effectiveness of your program.



Paul Llewellyn,
General Sales Manager

"Our business is ensuring equipment reliability through lubrication best practices. We protect your production equipment with the right lubricant, in the right place, at the right time, with the right quality and quantity."



Oil Analysis



Storage



Handling & Transfer

Handling & Transfer

Keeps lubricants contamination-free and keeps equipment properly lubricated for optimum performance

- Transporting, pumping and dispensing equipment
- Customizable automatic lubrication systems
- Single- or multi-point grease lubricators
- Clear Grease Guns with color-coding options
- Color-coded grease fitting protectors
- Color-coding and ID tags to prevent misapplication and cross-contamination

Contamination

Exclusion & Removal

Protects and enhances performance of valuable lubricants and machinery

- Desiccant breathers for absorbing moisture and preventing particulate ingestion
- Adapters and quick connect couplers for preventing contamination at drum and equipment level
- Mobile and stationary filtration carts for achieving oil's ISO cleanliness target
- Sight glasses for monitoring oil levels, inspecting oil and removing water
- Color-coding and ID tags to prevent misapplication and cross-contamination

Education & Training

Ensures knowledgeable employees and sustainable improvements

- Onsite, public and online course options
- Consulting services
- Retainer-based services

Design, Implementation & Support

Initiates and maintains a Lubrication Reliability Program

- Best practices approach
- Local MLT and/or CLS trained lubrication consultant
- Corporate technical support

LE Provides Solutions for

Ensuring Reliability Since 1951

Water and wastewater treatment facilities alike can benefit from the standout mix of products, services, knowledge and experience offered by Lubrication Engineers, Inc. With years of experience in the field, we understand the unique challenges presented by these operations and can help you take care of your valuable assets while lowering your costs.

LE's enhanced lubricants, made of highly refined base oils and proprietary additives, far exceed the performance of conventional lubricants in a variety of applications. They extend lubrication intervals and equipment life and significantly reduce wear, energy use, downtime and maintenance, thereby recovering the initial cost of the lubricant many times over.

We also offer a full line of lubrication reliability products and services, including solutions for oil analysis, storage, handling and transfer, contamination exclusion and removal, and education and training. Whether you need a solution to a single challenge or help setting up a complete lubrication reliability program, you can turn to LE for help.

The LE Difference

Comprehensive Product Line & Full-Service Support

- Complete reliability program, including lubricants, reliability products and services
- Trained, local lubrication consultant to visit on a regular basis
- Corporate technical support to offer expert advice and troubleshooting

Research & Development

- Technology Center that continually develops and improves LE lubricants and additives
- Advanced technology to ensure that LE products remain the finest available

Proprietary Additives

LE has developed four high-performance LE additives for exclusive use in its lubricants.

- Almasol® solid wear-reducing additive
- Monolec® liquid wear-reducing additive
- Duolec® dual-acting (wear-reducing and extreme pressure) additive
- Quinplex® impact- and water-resistant additive



LE's state-of-the-art manufacturing facility and technology center is located in Wichita, KS. Sales, customer service and technical support functions are based in Fort Worth, TX. Our nationwide network of trained lubrication consultants ensures timely onsite assistance after the sale.



Nearly 60 percent of LE's lubricant orders are on the road the same day we receive them, while 95 percent go out in one day or less. Distribution comes out of Wichita as well as warehouses in Knoxville, TN, and Las Vegas, NV.



Water Treatment Plants

Enhanced Lubricants

LE's premium industrial lubricants – including both mineral and synthetic options – are available in a wide range of penetration and viscosity grades. From this broad offering, we are able to make recommendations based on your specific application and equipment needs.

Following is a list of LE lubricants that have provided years of reliable service at water and wastewater treatment facilities around the world, along with the most common uses for them. For detailed descriptions and technical information, visit the product pages at www.le-inc.com, refer to individual product flyers available online or in print, or contact your local LE consultant for assistance.



Industrial Oils

Pump & motor bearings, gear reducers, enclosed gears, air compressors, hydraulics, turbines, wire rope & chains

- Duolec® Vari-Purpose Gear Lubricant (1601-1609)
- Duolec® Industrial Lubricant (1302)
- Wirelife™ Almasol® Coating Lubricant (2002)
- Wirelife™ Monolec® Penetrating Lubricant (2001)
- Monolec® Penetrating Oil and Lubricant (2059)
- Monolec® Hydraulic Oil (6105-6120 & 6520)
- Monolec® R&O Compressor/Turbine Oil (6401-6407)
- Low Tox® Turbine Oil (6411-6414)
- Low Tox® Hydraulic Oil (6601-6604)
- Multilec® Industrial Oil (6801-6807)

Natural Gas Engine Oils

Stationary natural gas engines that run on digester gas

- All Purpose Natural Gas Engine Oil (4909)
- Monolec® Natural Gas Engine Oil (8845)
- Monolec® Natural Gas Engine Oil (8945)
- Monolec® Landfill Gas Engine Oil (8947 & 8949)

Engine Oils, Transmission Fluids & Fuel Supplements

Diesel & gasoline engines, transmissions, converters

- L-X® Heavy-Duty Chemical Supplement (2300)
- BTU+ Diesel Fuel Improver (2410-2420)
- Monolec® Power Fluid (7500)
- Monolec® Ultra-Blend Engine Oil (8130)
- Monolec® GFS Engine Oil (8420-8450)
- Monolec Ultra® Engine Oil (8800)

Greases

Open gears, grease fittings, chain drives & sprockets

- Wirelife™ Almasol® Coating Grease (451-453)
- Almaplex® Industrial Lubricant (1274-1275)
- Monolec® Extend EM Grease (1282)
- Almaplex® Ultra-Syn Lubricant (1299)
- Almagard® Vari-Purpose Lubricant (3750-3752)
- Monolec® Multiplex Lubricant (4622)
- Monolec® Industrial Lubricant (4700-4702)
- Pyroshield® Syn Open Gear Grease (5100, 5180 & 5182)
- Syntemp® Synthetic Lubricant (9102)

Food Grade Oils & Greases

- Quinplex® White Oil (4010-4040)
- Quinplex® Synthetic Food Grade Oil (4046)
- Quinplex® Penetrating Oil & Lubricant (4058-4059)
- Quinplex® White Gear Lubricant (4090, 4140 & 4250)
- Quinplex® Food Machinery Lubricant (4023-4025)

Other

Drive Chains

- Almasol® Dry Film Lubricant (9200)



Does your lubricant supplier do all of this?

If your lubricant supplier does not provide the products, services and results listed below as part of its lubricant reliability program, perhaps it is time to change suppliers.

LE Lubrication Reliability Program

- ✓ 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

Almasol®, Monolec®, Duolec®, Quinplex®, Wirelife®, Almaplex®, Almagard®, Pyroshield®, Syntemp®, Monolex®, Low Tox®, Multilec®, and L-X® are registered trademarks of Lubrication Engineers, Inc.

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