



Chevron ISOCLEAN[®] Services

Reliability-based Lubricants (RbL®) Practices For Increased Productivity and Optimal Equipment Performance

With Chevron's ISOCLEAN Services, Reliability is Built In

Reliability-based Lubrication (RbL) isn't just about lubricants. It's a powerful combination of knowledgeable people, targeted products and services, and customized solutions for your equipment. Chevron's RbL and ISOCLEAN Services are a comprehensive, proactive approach to achieving lubrication excellence that helps you add value to your business and achieve your financial goals.

ISOCLEAN Services — In Plant Services

Depending on your business – whether it's construction, mining, waste collection, power generation, petrochemical, injection molding, marine, manufacturing or other – Chevron's ISOCLEAN Services will help you achieve the desired cleanliness levels required in the original equipment manufacturers' specifications.

Fluid purification and dehydration

Onsite removal of fluid contaminants including particulates, water and dissolved gases for operating equipment, system reservoirs and bulk storage tanks. Various processes and techniques will be used depending on scope including fine filtration, vacuum dehydration and centrifugal separation. This service will increase the reliability and the life of the system by minimizing fluid oxidation, maintaining lubricity properties and reducing fluid aeration.

Varnish removal and mitigation

Onsite removal and mitigation of varnish using the latest chemical cleaning and resin technologies, lubricant consulting and other proven methods to address all types of varnish problems. This service will keep your system clean and operating in peak condition.

High-velocity flushing

Onsite system flushing for new system commissioning, plant turnarounds and routine maintenance. This service of removing contaminants and water before system startup will extend fluid life and assist in maximizing equipment life.

Reservoir and tank cleaning

Performed by fully trained technicians certified in confined-space entry. This service ensures safe and effective contaminant removal and clean oil storage. Ensures systems are ready for ISOCLEAN Certified Lubricants to maintain fluid cleanliness levels to the point of equipment fill.

Condition monitoring and system audits

Onsite sampling, measurement, and monitoring of fluid service life and fluid cleanliness levels on rotating equipment. Perform trend analysis as well as correct action planning if required. This service will assist in maximizing uptime and reliability of equipment.

Fluid handling consultation

Evaluation of bulk storage facilities, product handling processes and breather management. This service will ensure systems are properly maintained to meet fluid ISO cleanliness levels in operating equipment.



Plastic injection molding



Vacuum dehydrator used to remove water contamination.

With the Right Support, Running Your Business Gets Easier With Time

Operating conditions are becoming more severe; manpower is becoming more precious; the cost of downtime is increasing; energy costs are cutting into profits; new government and environmental mandates are being introduced; and OEM requirements are becoming more demanding. All of these add to the challenge of running your equipment efficiently and profitably. These challenges are the very ones that require the expertise and services you will get from the Chevron ISOCLEAN Services providers.

ISOCLEAN Services is a solution for meeting system fluid specifications for the following companies by segment:

Industrial Turbine Systems:

General Electric, Siemens, Mitsubishi, Alstom

Hydraulic Systems:

Bosch Rexroth, Eaton-Vickers, Parker Hannifin (Denison), Joy, MAG Cincinnati

Mining & Construction Equipment:

Caterpillar, John Deere, Komatsu, Hitachi, Volvo

Plastic Injection Molding:

Arburg, Battenfeld, Cincinnati Milacron, Engel Electric, HPM, Husky, Meiki, Newbury, Nissei, Sumitomo, Toshiba, Van Dorn

How to Control Your Total Cost of Operation

Ultimately, the performance of your equipment depends on the cleanliness and integrity of the fluid being used. Equipment operating under normal temperature with fluid systems kept free of solids, moisture and gases are likely to last significantly longer than equipment with contaminated systems. The more sophisticated the equipment, the greater the cost and potential for failure or poor performance due to contaminated fluid systems.

Our ISOCLEAN Services are a proactive approach to maintaining your systems for peak performance and maximum component service life.

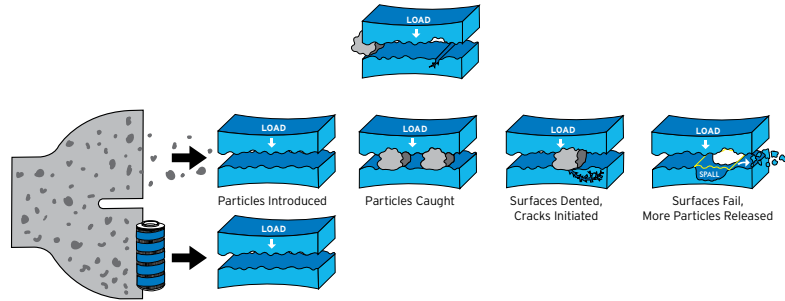
It starts with a detailed site assessment by certified ISOCLEAN technicians to establish base-line conditions and best-in-class performance standards for your specific operation. Immediate corrective action plans are recommended to get poor-performing systems up to standards or to reduce imminent threats to your production. Once under control, our ISOCLEAN technicians execute on a proactive program through advanced oil analysis and equipment inspection programs to identify problems before they shut you down.



The left beaker pictured is actual hydraulic oil with high levels of moisture and particle contamination at ISO-Cleanliness code 22/21/20. The right beaker shows the same sample after the contaminants were removed at the new ISO-Cleanliness code 18/16/13.

Solid Contamination

When solids such as metal particles, dirt and other contaminants enter the dynamic lubrication zone of machine components, the chain reaction of wear begins. The initial contact of the particle with component surfaces generates additional wear debris that, if not removed, remain in the system and accelerate the cycle. Leaking or ruptured hoses, leaking seals, pump, bearing, and servo failures are the direct results.



Industrial turbine systems



Mining and construction equipment



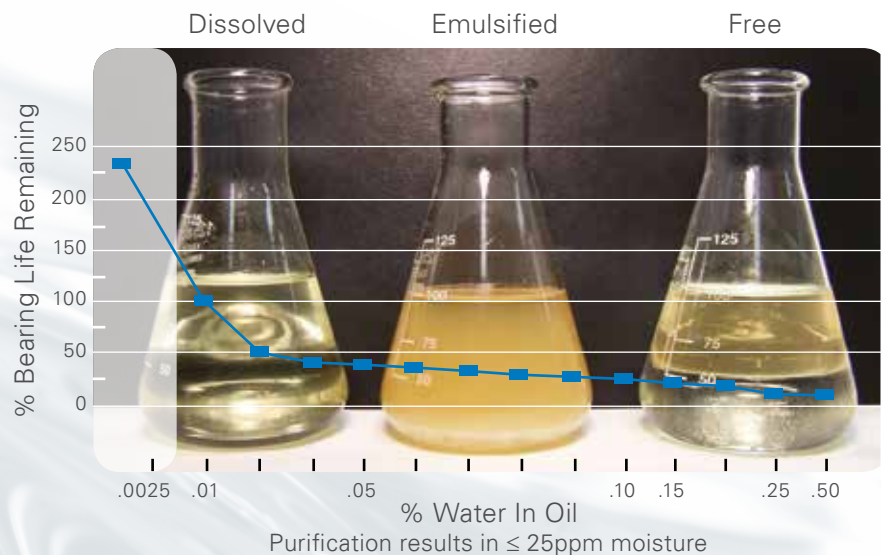
Bulk storage tanks

Moisture Contamination

Water affects both the fluid and your equipment. It promotes oil oxidation and hydrolyzes (chemically attacks) fluid additives that compromise lubricant performance and can actually generate highly corrosive byproducts. A moisture-degraded fluid cannot protect equipment leading to wear and failure. Moisture also attacks through rust, corrosion, vaporous cavitation and loss of lubricant film strength.

Liquid and Gas Contamination

When external gases, liquids and process carryovers mix with a system's fluid, significant changes in the fluid's physical and chemical properties can result. Some of the effects of foreign fluid and gases are foaming, loss of lubricant film strength, fluid becoming acidic, cavitation erosion and reduced flashpoint.



The greater percentage of water in a lubricant accelerates wear on bearings. In the beakers above, the concentration of water increases from left to right, reducing the bearing life.

Chevron's Certification Process

We don't choose just anybody and neither should you. You can be assured of receiving quality ISOCLEAN Services provided by dedicated professionals.



Filtration monitoring (above) and filtration system (below left)



- Experience in the industry and proven performance**
- Safety and compliance program**
- Insurance**
- Spill response**
- Training program**
- Process library**
- Verification of results (third-party laboratory analysis)**
- MSHA and OSHA certified**

Take advantage of ISOCLEAN Services to achieve lubrication excellence that will help you add value to your business and achieve your financial goals.

To learn more about Chevron ISOCLEAN Services,
visit www.ChevronISOCLEAN.com or call
1-866-354-4476