



LUBCHECK OIL AND MACHINE DIAGNOSTICS

MUCH MORE RELIABLE MACHINERY – REDUCED COSTS

IN INDUSTRIAL PRODUCTION, EVEN ONE HOUR OF DOWNTIME CAN CAUSE MILLIONS IN LOSSES

Sudden malfunctions resulting in production stoppages and unplanned repairs are the nightmare of every manufacturing company. The costs arising from unexpected production loss and repairs can cause dire financial difficulties in the life of a company, so avoiding such problems is of vital importance. **Unexpected malfunctions can be avoided!**

The oil speaks, we listen!

Machines and their lubricants are in constant interaction, so lubricants can also show traces of the correct or irregular operation of the equipment. Regular checking of lubricants allows tracking of equipment condition and can reveal malfunctions as they start to set in and thus prevent damage accumulating that can be expensive to repair later on.

The LubCheck concept

The essence of the LubCheck concept is the decoding, interpreting and acquisition of diagnostic information in a drop of oil to support maintenance with the help of targeted testing. The metrics of a lubricant's physical and chemical properties, the intensity of changes in them, the types and quantity of contaminants entering the lubricant and the nature and proportion of wear particles together represent important information from which we can infer the correct or irregular operation of machines as well as the correct or incorrect choice of lubricant and its continued usability.

LubCheck diagnostics permit

- ▼ discovery of unexpected malfunctions in their early stages
- ▼ identification of hidden failure in machines and irregular operation
- ▼ reduction or elimination of lost production
- ▼ reduction of equipment maintenance costs
- ▼ more accurate and easy-to-plan maintenance
- ▼ equipment oil change cycle optimisation
- ▼ increased machine reliability

We are not alone

MOL's LubCheck laboratory has been a member of the WearCheck International since 1997. This professional association unites laboratories operating on four continents around the world. The regular exchange of experience and knowledge-sharing among members ensures that we are always up to date.






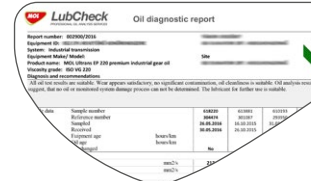


COST OPTIMISATION WITHOUT ANY RISK

LubCheck diagnostics help optimise costs in many different areas.

DIRECT IMPACT	INDIRECT IMPACT	IMPACT ON COSTS
Unexpected malfunctions can be recognised in the early stages, as a machine's hidden failure and malfunction becomes evident	Increase in machines' life spans	Component spares and maintenance costs reduced
Lubricant use and oil change intervals are optimised	Oil replacement cycle extended Use of lubricant charges maximised	Lubricant costs reduced
Equipment condition can be surveyed without serious physical intervention; the observation of machine's condition changes becomes possible	Increased machine reliability Increase in machines' life spans	Inspection costs reduced
Production and maintenance processes become more predictable and controllable	Increased production scheduling efficiency Downtimes reduced; utilisation of production capacity increases	Unplanned extra expenses reduced
Less used oil and hazardous waste is produced	Reduced environmental impact	Neutralisation costs decreased

A complex procedure in four simple steps

Taking samples	Forwarding samples	Analysis	Expert opinion
<p>Please follow the process described in the attached Information booklet to ensure proper sampling!</p> 	<p>Following sampling, please fill out the attached form, and forward the oil sample vessel to the MOL-LUB Ltd. Lubricant Laboratory Centre!</p> 	<p>The samples received are analysed and a diagnosis is made by lubrication engineering experts.</p> 	<p>Test results are summarised within 72 hours and the partner receives an e-mail describing any likely problems and effective preventive maintenance actions to be taken.</p> 

More than just numbers

All relevant data are included in the LubCheck report, which uses easy-to-understand language, alongside our experts' individual assessments and opinions. The diagnosis field shows a summary of professional opinions based on the test results. Changes in machinery and lubricant condition are also simple to follow, because results of the previous three tests also appear next to current one.

TESTS AND MOST FREQUENT PROBLEMS

After samples arrive, they are subjected to the following standard tests. In cases where problems are complex, however, additional special tests are conducted so that no malfunction whatsoever can remain hidden.

	Gas engine oils	Hydraulic oils	Turbine oils	Industrial gear oils	Compressor oils	Heat transfer oils	Machine tool oils	Transformer oils
Viscosity	✓	✓	✓	✓	✓	✓	✓	✓
Acid number	✓	✓	✓	✓	✓	✓	✓	
Additive elements (ICP)	✓	✓	✓	✓	✓	✓	✓	
Wear metals	✓	✓	✓	✓	✓		✓	
Contaminants	✓	✓	✓	✓	✓	✓	✓	✓
Ferrography	✓	✓		✓	✓		✓	
Wear index	✓	✓		✓	✓		✓	
Cleanliness (ISO 4406)		✓	✓	✓	✓		✓	
Additive content (FT-IR)					✓	✓		✓
Degradation Products						✓		
Emulsibility			✓	✓			✓	
Flash point					✓	✓		

The Most Frequent Industrial Lubricant-Related Problems And Their Solutions

Problem description	Analyses results	Potential cause	Effect	Recommendation
Contamination with abrasive particles	High silicon content; high particle number; high wear metals content	Clogged or damaged air breather; worn or damaged seals	Increased wear, potential failure	Replace air breather or filter; change oil
Excessive wear	Large amount of wear metals	Effect of another failure type (water ingress, pollution, wrong product and/or overheating)	Shorter equipment lifespan	Check whole system; repair failures; change oil!
Lubricant deteriorated sooner than when used normally	Increased viscosity; increased acid number	Overheating; oil thermally degraded and at the end of its useful life	Increased wear and corrosion, potential failure	Check system for overheating, possible air entry; check oil cooler; change oil!
Wrong lubricant	Product out of viscosity grade and/or additive metals not typical	Wrong lubricant for application or product mixed with other product	Increased wear, potential failure	Check lubricant used, change oil!



MORE THAN MERELY A SERVICE – A PARTNERSHIP

- ✔ Over 110 years of experience in lubricant production
- ✔ More than 20 years in oil and machine diagnostics



Cooperation between those operating the equipment and engineers who deliver the service is the key to LubCheck's success. Today, hundreds of satisfied customers enjoy the operational and economic benefits that LubCheck Oil and Machine Diagnostics provide:

BORSODCHEM LTD. • CONTINENTAL AUTOMOTIVE HUNGARY LTD. • DUNA-DRÁVA CEMENT LTD. • FUX LTD. • HAMBURGER HUNGARIA POWER LTD. • INOTAL PLC. • ISD DUNAFERR PLC. • MAGYAR SUZUKI CORPORATION • MESSER HUNGAROGÁZ LTD. • MVM PAKS NUCLEAR POWER PLANT LTD. • NITROGÉN MŰVEK CO. • RÁBA VEHICLE LTD. • ROTARY DRILLING LTD. • ROTO ELZETT CERTA LTD. • SAPA PROFILES KFT. • SEMPERFORM LTD. • SINERGY LTD. • VIBRACOUSTIC CV AIR SPRINGS HUNGARY LTD. • YORKSHIRE FITTINGS LTD.

Our lubricant services:

- ♥ Lubrication technology consulting
- ♥ On-site lubricant maintenance
- ♥ Lubrication assessment
- ♥ Lubrication technology audit
- ♥ Fluid management
- ♥ Training courses

YOUR PARTNER:

