

your global specialist

Industrial sector

KlüberEfficiencySupport.

Klüber Lubrication Services – Success for you from one tool box!



Recognise the potential for efficiency improvement	3
KlüberEfficiencySupport – Overview	4
KlüberEnergy	6
KlüberMaintain	7
KlüberMonitor	8
KlüberRenew	9

Recognise the potential for efficiency improvement

Professional range of services provides real added value

Manufacturers and operators require their machinery to run reliably and efficiently for the longest possible service life. Selection of the most appropriate lubrication solution offers a huge potential to maximise energy gain with minimum spare part and labour usage while increasing productivity.

In addition to its high-quality lubricants, the professional services provided by Klüber Lubrication enable versatile added value solutions for companies from various industries. Our range of services come together in one tool box, "KlüberEfficiencySupport".

A systematic approach to identify and optimise savings potential at each site

This Klüber Lubrication support matrix is a tried-and-tested multi-stage analytical approach.

We identify savings possibilities together with you to enable optimisation. We develop solutions to improve the energy efficiency of your equipment or the efficiency of your maintenance, production processes or components which extend well beyond a simple lubricant recommendation. In addition we verify the effects our measures have in practice to provide tangible value from the solutions proposed. This provides the basis for you to multiply the results.

Efficiency improvements through know-how

With each module we offer appropriate training on lubrication and tribology for your staff. We match the curriculum to the individual functions of your staff in the company enabling them to develop optimised results themselves.

Your staff will be able to use their newly acquired skills in practical terms to increase efficiency and safety of production processes in your plant. Furthermore, engineers will be able to integrate improvements already in the development stages as they obtain valuable knowledge on the tribological system and associated lubrication issues. Our solutions allow you to implement and maintain long-term efficiency increases.

Your benefits at a glance

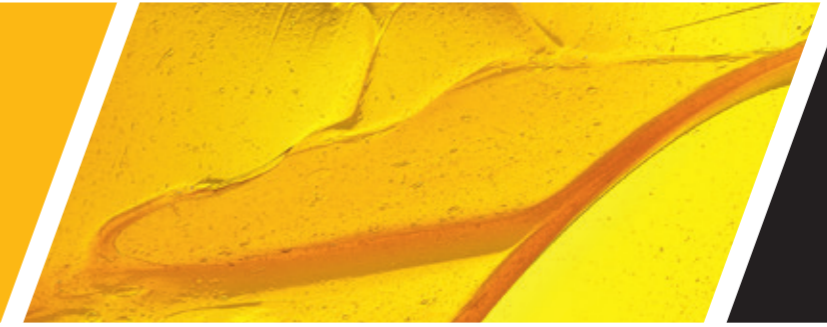
- Valuable: We improve the efficiency of your production equipment and processes and provide the necessary tools for your staff to become more efficient
- Customised: We provide solutions tailored to your needs
- Measurable: We make added value (savings) calculable
- Sustainable: We ensure long-term savings

KlüberEfficiencySupport is available to you worldwide. We are where you are!

Just contact us – call your personal Klüber Lubrication consultant or send an e-mail to: service@klueber.com and we will be pleased to help.



KlüberEfficiencySupport – Overview



KlüberEnergy Energy Efficiency	KlüberMaintain Maintenance Efficiency	KlüberMonitor Production Efficiency	KlüberRenew Working part Efficiency
 <p>Services for optimum energy efficiency of your lubricant application. Reports on concrete savings.</p>	 <p>Support for your lubrication management and maintenance programme/TPM³⁾ considering the necessary lubrication maintenance tasks.</p>	 <p>We recommend optimisations to increase your productivity on the basis of tribological analyses of your application and bench tests.</p>	 <p>Services to increase the lifetime of your cost-intensive components such as large gear drives and chains including appropriate training.</p>
Energy consulting (tribo-system)	Plant lube chart creation	Oil condition analysis (OCA)	Consulting (applications / lube systems)
Energy measurement	Asset register / SOP ²⁾	Grease condition analysis (GCA)	Commissioning / Running in
Energy evaluation ¹⁾	Compliance / Labelling	Extended analyses (material, component, surface, process)	Repair lubrication and sealing
Reporting (energy / cost savings)	Lubrication task management	Bench tests	Mechanical treatment
Training (maintenance / operator)		Engineering training	Renew training
KlüberCollege – People Efficiency			

1) Patent auditable for international certification companies 2) Standard Operation Procedure 3) Total Productive Maintenance



Save money and protect the environment! From measurements to recommendations

You benefit twice from energy savings: your energy costs decrease and you reduce your impact on nature's resources. You save real money by reducing your energy costs with KlüberEnergy.

KlüberEnergy projects are implemented directly on your machinery. We register all savings potentials in your tribo-systems, measure power consumption before and after implementing the solution, provide professional analyses of the measured data and translate the electrical readings into concrete financial savings.

In agreed applications, the lubricants are changed and the measurements repeated to demonstrate the improvements. After our professional data analysis which may require a comprehensive methodology according to international measurement and verification standards we provide you the finally attained kWh savings.

We will translate the electrical readings as well as reduction of other energy sources like e.g. steam and fuel consumption into cost savings or CO₂ reduction and also verify these by e.g. thermodynamic analysis.

This is the basis for you to scale up across the site and appreciate how simple it is to save money.

Your benefits at a glance

- Cost efficiency: Reduced energy consumption reduces energy and operating costs
- Eco-friendliness: A means to fulfil your environmental objectives
- Transparency: Before and after monitoring during the energy-efficiency project
- Customised: Tailor-made lubrication solutions based on a detailed technical analysis and measurement of individual applications
- Measurable: Clear overview of savings and improvements are provided
- Sustainable: Reduced long term energy consumption with yet further identified savings potentials

Energy savings with lubricants: Consultation and measurements

Initially, our experts identify possible applications together with you where a KlüberEnergy project is possible. Continuous power measurements on equipment using the original lubricants are taken as a baseline. Suitable tribological solutions based on Klüber Lubrication high-quality synthetic energy-saving lubricants are proposed as alternatives, illustrating the potential savings.

Optimised processes according to plan Use the right lubricant in the right place

A professionally constructed plant lubrication chart is an invaluable tool to ensure trouble-free maintenance relubrication is implemented in an efficient manner.

This is particularly true where high utilisation of capacities is an issue, to avoid unplanned downtime. Increased efficiency of your maintenance tasks by extended, predictable maintenance planning enables better usage of your lubricants and your maintenance capacities, saving you money.

Our labelling service provides you with a consistent and standardised system for identification of each lubrication point. Labelling of lubricant containers, grease guns, storage areas, bearing points helps to avoid production problems from application and use of the wrong lubricant. Labelling may also help you comply fully with legal requirements in the food-processing industry.

We offer a professional software solution for controlling, monitoring and documenting lubrication processes with the possibility to incorporate lubrication tasks within your internal IT systems.

Optimise product capacities and reduce maintenance costs – support for your TPM¹⁾ process

To ease your work, we analyse your machines, providing an asset register and record all friction points and used lubricants within your plant. From this we create a detailed lubrication chart explaining the procedure for each lubrication point. This "master lubrication reference document" is the starting point for maintenance optimisation including:

- defined lubricant dosage to each point for clean lube point surroundings
- optimised lubricant use to prevent wastage, contamination etc.
- correctly selected maintenance intervals
- lubrication via the most appropriate application method
- improvements to avoid stopping machinery to re-lubricate

Our experts develop an optimisation plan showing measures to improve TPM processes, including e.g.: maintenance functions, training, quality management, environmental, health and safety aspects. Trainings on maintenance and operation ensure long-term efficiency increases in your maintenance processes.

Your benefits at a glance

- Process reliability: Clear and structured planning and documentation of lubrication tasks that can be integrated into IT systems if required
- Quality assurance: Major contributions to safeguard product quality, e.g. where lubricants with special registration are required, such as in the food-processing industry
- Customised: Consideration of all lubricants and lubrication points in your plant, regardless of the supplier or manufacturer
- Measurable: Clear overview of savings and improvements obtained
- Sustainable: Use the potential to reduce lubricant quantities, extend maintenance intervals and ensure long-term savings/optimisations

1) Total Productive Maintenance

KlüberMonitor



Lubricant monitoring enables reliability improvement

A well-planned and correctly monitored lubrication regime provides the foundation for reliable machinery operation. "KlüberMonitor" is the support tool for monitoring each tribological system, like each bearing, chain, compressor or gearbox.

Snapshot, how does this monitoring process work?

Based on experience, our specialists analyse your oils, greases and lubricated components to determine whether the lubricant can continue to be used or whether replacement is necessary due to contamination or for other reasons. This rapid service is provided through standardised test data compiled within specialist laboratory reports and related to the application.

Expert advice based on trend analyses

Based on long-term observation of lubrication points our chemistry, lubrication and application engineering experts are able to provide high-level recommendations by using their complete scope of analytical possibilities. A detailed analysis of this type can show machine condition, achieving the lubricant design lifetime with reduced risk of unplanned maintenance downtime. This may also support a better understanding of analysis and sensor data.

Analyses of extreme situations

These trend analyses allow to select test rigs showing the same lubricant behaviour as in your applications. Through our extensive suite of test equipment we can further investigate lubricant behaviour in extreme situations, simulating your applications, e.g. at high temperatures, without posing a risk to your equipment or processes. We offer the combination of professional surface and material analysis combined with comprehensive recommendations for optimising your tribological systems.

Our tribology experts offer technical consulting advice and lubrication recommendations to contribute to operational safety and to save you considerable costs. Trainings on specified topics enable your experts to develop tribological systems for long-term efficiency.

Your benefits at a glance

- Efficient production: Optimising your production capacities while reducing the risk of unplanned downtime
- Cost-efficiency: Reduced maintenance costs and maximum lubricant lifetime
- Customised: Individual recommendations to attain optimum maintenance intervals and tribo-systems
- Measurable: Clear overview of analysis results and recommendations
- Sustainable: Long-term productivity due to continuous monitoring, advice, consultation and training

KlüberRenew



Longer lubricant and component lifetimes save you money

KlüberRenew comprises a range of high-quality services to increase the lifetime and efficiency of your machines and components, thus reducing maintenance costs and providing the necessary return on investment (ROI).

Professional lubrication management

The correct use of lubricants has many advantages. Our tribology experts will be happy to support you with their knowledge and skills, find solutions for lubricant replacement or improved operating conditions. We will ensure long-term operation of your machinery and avoid any damage arising from a change of lubricant such as incompatibility with seals or internal gearbox paint.

Premium service = extended maintenance intervals with reduced outages

Special services provided by Klüber Lubrication contribute significantly to operational reliability and increased machine lifetime. Based on our long-standing experience we help you reduce costs for unplanned downtime and achieve improved planning of investment for spare parts etc. By professional selection and application of speciality lubricants our experts can, for example, considerably improve the condition of damaged tooth flanks in large gear drives and expensive chains can be treated or sealed to increase their lifetime significantly.

Further special services are available:

- Analysis and repair of large gear drives
- Forced running-in lubrication
- Inspection of large gear alignment
- Application-related training
- Detailed component failure analysis

Special services provided by Klüber Lubrication contribute significantly to operational reliability and increased machine lifetime.

Your benefits at a glance

- Savings: Reduction of spares inventory and stores costs as components last longer
- Cost-efficiency: Avoid costs for unplanned production downtime and repair costs
- Efficient production: Production stoppages may be preventable during maintenance relubrication operations
- Customised care: Monitoring and prevention of damage during lubricant changeovers to ensure full functionality of your machinery
- Measurable: Clear overview of savings and improvements obtained
- Sustainable: Longer machine running times and postponed asset investments, e.g. for spare components



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Klüber Lubrication – your global specialist

Innovative tribological solutions are our passion. Through personal contact and consultation, we help our customers to be successful worldwide, in all industries and markets. With our ambitious technical concepts and experienced, competent staff we have been fulfilling increasingly demanding requirements by manufacturing efficient high-performance lubricants for more than 80 years.

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