



Winter 2024

OELCHECKER



HOT TOPIC

The crux of the matter –
Basic rules of sampling!

TECHNOLOGY FOCUS

Damage to SCR catalytic converters –
Caused by AdBlue®?

OILDOC ACADEMY

OilDoc Conference 2025 – Preliminary
programme has been published!

AND MUCH MORE...



“ A complete change? No thanks!

With her appointment as Managing Director, Petra Bots has been at the helm of OELCHECK GmbH together with her brother, Paul Weismann, since summer 2024. The baton was finally passed to us, the new generation of our family business.

And together we will continue the very special “spirit” with which our parents, Barbara and Peter Weismann, shaped the company. The footsteps we are following in are big. After all, our parents are two impressive entrepreneurial figures.

Over the past 33 years, they have built OELCHECK and made it what it is today: The leading laboratory for lubricant and operating fluid analyses in Europe.

But our parents were also our role models, so the decision in favour of OELCHECK was not a difficult one. Paul Weismann actively joined the Management Board back in 2006 and was thus able to benefit first-hand from the experiences of the company founders and grow into his management role. Petra Bots first embarked on a career in the marketing industry after completing her education. At the same time, however, she was always involved in the interests of OELCHECK and in 2013, with the takeover of the management of the OilDoc Academy, decided to focus her activities even more on the family businesses.

Basically, one thing was always important to us: We wanted to take over management not only because of our family relationship with the company, but also because of our skills, visions and our passion for OELCHECK. This also ensures the continuation of our company – entirely in the spirit of the family, without an external managing director.

The transition to management was almost seamless. However, our parents, Barbara and Peter Weismann, still support us as advisory board members of OELCHECK GmbH and are involved in strategic decisions. We can still talk openly with them about everything and find solutions together.

Whether it's dealing with our parents or OELCHECK employees: Respect and appreciation are particularly important to us.

Together, we will lead OELCHECK into the future. But one thing will not change: OELCHECK wants to continue offering its customers lubricant and operating fluid analyses of the highest quality, with the greatest possible speed and comprehensible evaluation by experienced tribologists, as well as many other advantages.

With the management, we have also taken responsibility for the fate of our company. And we experienced what this can mean first-hand in summer 2024. Heavy rain had destroyed our servers, the heart of IT. The start of our joint management could hardly have gone any worse. But we passed the test and look forward to many exciting and successful years with our customers and OELCHECK!

Paul Weismann Petra Bots

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OELCHECK EXPRESSO



Sampling – Basis for reliable analyses and diagnoses

Every sample of a lubricant or operating fluid is full of information. The OELCHECK tribologists evaluate these using state-of-the-art analysis methods and then create their diagnoses. However, their accuracy depends decisively on the quality of the samples. After all, they should be representative and not provide incorrect information. – That's why you should use our tips for correct sampling!

→ Hot topic | Page 4-6



Transformer Oil Analysis – Easier sampling, even more values

From now on, there is no need for time-consuming sampling using a glass syringe! Instead, gas-tight 1-litre aluminium bottles are used. They are included in every OELCHECK all-inclusive analysis set for transformer oils. An even more powerful gas chromatograph for gas-in-oil analyses was installed in the OELCHECK laboratory. The laboratory reports now contain values for eleven gas types, including propane and propylene, instead of the previous nine.

→ Inside OELCHECK | Page 9-10



SCR catalytic converters – Reliably preventing damage caused by AdBlue®

Diesel engines with exhaust aftertreatment systems require AdBlue®. But the urea solution can also cause damage to the catalytic converters. In these cases, OELCHECK all-inclusive analysis sets are used to determine the causes. The result is always: the problem is homemade! Most of the damage could be avoided by handling AdBlue® with care.

→ Technology Focus | Pages 12-13



OilDoc Conference 2025 – The preliminary programme has been finalised

Look forward to 60+ exciting lectures from top international speakers presenting you with the latest trends and innovations in lubrication and oil analysis.

Main topics: Lubricants & Sustainability, Innovative Oil Analysis Methods, Oil Sensors & Digitalisation, Lubricants & Grease Analytics, Metalworking Fluids, Lubrication in Wind Energy, Health & Environmental Aspects of Lubricants, Laboratory Automation and more.

Page 16-19

OilDoc
Conference &
Exhibition



SAMPLING

BASIS FOR RELIABLE ANALYSES AND DIAGNOSES

Correct sampling is a prerequisite for meaningful laboratory results and reliable decisions. Even state-of-the-art testing equipment and experienced evaluation engineers cannot realise their potential if the basic rules of professional sampling are disregarded out of ignorance.

In practice, there is rarely a royal road to optimal sampling. Furthermore, it is impossible here to fully represent the individual circumstances of many thousands of machines and systems. On the other hand, it makes sense to establish rules that show what is feasible and what should not be done during sampling. Industry-specific practical examples make a significant contribution to bringing the entire programme into everyday work.

The aim is to obtain representative oil or operating fluid samples that are a reliable basis for decisions and at the same time do not lose sight of the person who has to take these samples.

A brief look at five simple questions illustrates what is important when taking an oil or operating fluid sample:

- When?
- Where?
- How? With what?
- Into what?
- What information?

Before we get started...

Infrequent and short contact with a lubricant is not a problem under normal circumstances. Nevertheless, general hygiene and health aspects should be taken into account!

The more frequently and the longer the skin is in contact with oil, the more important it is to wear protective clothing such as gloves and safety glasses. Clothing contaminated with oil should be changed immediately and contaminated cleaning rags should never be kept on the body, e.g. in the pockets of trousers. Special creams for the skin also serve as protection.

The following table shows some practical examples and important notes and recommendations.

Application	! Please observe:	Recommendation
Engines	High temperature in the oil	Use of gloves and heat-resistant tools and containers
Hydraulic systems	Very high pressure	Sampling only at specific points and pressure-resistant adjustable valves or oil from an area with negative pressure
Circulation systems	High pressure or temperature	Sampling only at specific points and pressure-resistant, adjustable valves or oil from an area with negative pressure
Heating systems	Very high temperature	Use of gloves and heat-resistant tools and containers
Refrigeration compressors	Hermetic system can contain refrigerants such as ammonia	Use of gas-proof bottles! Ammonia: do not smell the sample or the reservoir!
Transformer oils (Dissolved Gas Analysis (D.G.A.))	Concentration of gas depends on pressure and temperature	Use of gas-proof bottles and syringes; take a bubble-free sample

The following questions also help to prepare a sample collection well:

- Are sufficient aids available? For example, lint-free cleaning rags, collection containers for used or flushing oil or oil binders?
- Are special tools or aids required?
- Do special safety-related conditions of the system have to be taken into account?
- Does anyone need to be informed or even give their consent before accessing the system?

1. When? At the right time

When an oil sample is taken is primarily based on the operating condition of the machine or system when the sample is taken.

The rule is simple: The oil should be at operating temperature, in constant motion and in constant exchange with the system.

This has the following advantages:

- ➔ The moving oil reliably carries particles present in the system, both wear particles and contaminants.
- ➔ A warm oil is thinner and therefore easier to remove from the system.



- ➔ If sampling is technically possible while the machine is running, this eliminates the costs of production downtime and shutting down or starting up the system.
- ➔ If sampling is not possible while the machine is running, the sample should be taken as soon as possible after it has been switched off/stopped.

For example, if the machine has already broken down and the oil analysis is to help determine the cause of the damage afterwards, the rule cannot be complied with. A note on the consignment note helps to take this into account when evaluating the laboratory results.

How often, i.e. at what interval, should lubricants be tested?

Application	Standard interval	Long-term interval
Construction machine hydraulics ("Earth movement")	1,000–2,000 Op. hours	> 5,000 Op. hours
Biogas engine lubricating oil	300–500 Op. hours	> 3,000 Op. hours
Steam turbine lubricating or control oil	2 years	> 10 years
Gas turbine Lubricating/control oil	1 – 2 years	> 5 years
Injection moulding machine "24x7" Hydraulic oil	1 – 2 years	> 4 years
Forming press, hydraulic oil automotive body production	1 - 2 years	> 5 years
Wind turbines Main gearbox, lubricating oil	2 years	>15 years
Paper machine circulation lubrication	1 – 2 years	> 4 years

The figures given in the table are guideline values. Different operating conditions, different constructive designs and different requirements for availability can shift the specified guideline values both downwards and upwards. You can find out more about this in OELCHECKER Summer 2024.

2. Where? The right place

For example, for a routine check of the oil from a system with circulation lubrication, the return line upstream of the filter element is a suitable place to extract as much information as possible from the sample. Then information about the wear of all lubricated components, the degree of contamination and the condition of the oil are included in the sample. Sampling downstream of the filter element should be avoided, as some information may already be filtered out. Sampling from the filter itself also does not provide representative information about the condition of the oil and the system.

If there is no special return line in oil lubrication systems, for example in motors or gearboxes, a point in the feed line downstream of the pump can be selected. For this purpose, a suitable sampling point should be permanently installed if not available.

On pipelines, places with turbulent flow conditions are to be preferred, e.g. at or shortly after a pipe bend.

Special questions often lead to specific sampling points. For example, a sample is taken directly from the return line of a bearing to obtain detailed information about the wear condition of this bearing.

3. How? The right method

The "how" not only shows which technical options are available for taking an oil sample. Above all, it is also a matter of keeping safety in mind, e.g. with pressurised systems or at very high oil temperatures.

A permanently installed sampling point is required for sampling while the machine is running. On the one hand, this enables representative sampling and, at the same time, a high level of safety. In hydraulic systems, there are often Minimes connections. For this purpose, the design of the sampling tool must be adapted to the pressure conditions of the system, e.g. depending on the level of pressure through a throttle valve.

Connection points already integrated in the system are provided with a dust protection cap. Before taking the sample, the sampling point must be cleaned and a corresponding partial quantity of the drained oil must first be discarded in order to flush the sampling point including the feed line. Otherwise the extracted oil quantity is not representative of the system.

Hermetically sealed systems must only be sampled via special sampling points. If the operating oil has unusually high temperatures, e.g. in heat transfer systems, the oil sample should be taken via a special cooling trap.

Not every system offers a permanently installed sampling point. Below is a brief overview of how samples can be taken from the systems:

Examples of sampling from different systems

- **Directly into the sample bottle during oil change**
From any oil container if there is no other way to get a sample. Clean and rinse the sampling point before sampling! Applicable e.g. for many small systems, oil sumps etc. without their own circulation lubrication. Here, too, a small amount of the drained oil must first be discarded before the sample is taken directly from the ("centre") oil jet.
- **From engines or oil sumps**
Directly into a special sample bottle with a manual vacuum pump. The lubricating oil circuit of engines is often easily accessible through the oil dipstick opening. Other systems may have an inspection opening, a cover or similar. Do not make the hose too long!
- **On-line sampling for hydraulics**
Directly into a special sample container at a Minimes connection with a pressure reducing valve. The best way to get a sample on-line.
Sampling upstream of the filter is important. Please note that hydraulic systems operate under high pressure, several hundred bar are common!
- **Industrial transmissions with special sampling points**
Specialised sampling ports allow sampling during operation. A good place for sampling is in the return line upstream of the filter. Please note that the system operates under pressure, in circulating lubrication systems up to 10 bar.
- **Grease-lubricated roller bearings**
With a grease sampling set consisting of a syringe or spatula and a special sample tube or with a so-called "grease thief".



If oil samples are to be taken from systems on a regular basis, it is recommended to install a permanent sampling point. Specialised suppliers offer a whole range of different solutions for pressurised and unpressurised oil systems.



Typical sampling ports for retrofitting (source: www.checkfluid.com)

If there are no special sampling ports or an oil sample needs to be taken spontaneously, the OELCHECK sample pump can be used when the machine is not running and the system is depressurised.

Instructions for handling this pump can be downloaded from de.oelcheck.com/probenpumpe/. You can also find an instructional video here.

4. Into what? The appropriate sample container



The general requirements for a sample vessel are

- clean
- oil-resistant
- tight closing
- as transparent as possible (and packed opaquely after sampling)

Unclean sample containers can significantly falsify test results. Already used oil or grease containers are absolutely unsuitable. Food packaging should also be taboo. Unused, specially cleaned sample vessels are correct.

Sample containers made of HD-PE material can be used for most lubricating oils, but are not compatible with synthetic aircraft turbine oils based on phosphoric acid ester. In this case, glass bottles with metal lids should be used.

Oil-tight closing plastic bottles with temperature resistance up to approx. 100 °C can be used for oil samples from transmissions, hydraulic systems or diesel engines.

Transparent materials allow for easy detection of unexpected changes in oil such as colour, dirt, free or emulsified water prior to analysis. Some laboratories prefer brown or green glass or metal containers to avoid changes caused by UV light. Only a few oil types are affected and it takes a long time for UV radiation to actually change the oil sample. If the transparent sample bottle is packaged after sampling, this can also be avoided.

The required sample quantity depends on the tests to be performed. For routine samples of transmissions, engines, other lubricating oils or hydraulic systems, a volume of 80 ml is usually sufficient. Test methods such as the determination of foaming behaviour, air or water separation capacity require a volume of 300 - 500 ml. The laboratory should inform the customer of the minimum sample quantity for the required tests and provide suitable sample containers.

Special sample vessels are required for special applications such as refrigerant compressors, transformer oils or heat transfer oils.

Overview of typical areas of application

■ **General applications, sample volume approx. 100 ml**
Oil samples from transmissions, engines, hydraulic systems and other applications
Firmly sealable, not pressure or gas-tight.



■ **General samples, sample volume 0.5 - 1.0 l**
If a larger quantity of oil is required, e.g. for air separation capacity, foaming behaviour.
Firmly sealable, not pressure or gas-tight.



■ **Refrigerator oils**
Aluminium bottle with metal lid.
Firmly sealable. Gas-tight, pressure-resistant.



■ **Transformer oils**
Metal bottle, gas-tight.
Attention: Bubble-free and 100% filling!



■ **Lubricating greases**
Syringe and tube or spatula for sampling from different areas.
Alternatively: Grease thief



5. What information? Information for the laboratory

It is often underestimated that, in addition to correct sampling, it is equally important to provide the laboratory with sufficient information about the sample. The evaluation by a tribologist is based on the information available to him.

Important information in brief	
Application	General information, assumed oil type, expected oil ageing scenario
Type and manufacturer	Materials used, e.g. for wear determination/element analysis
Oil designation	Comparison with fresh oil, e.g. additives, viscosity
Oil filling capacity	Typical concentrations of wear metals and contamination
Running time	Wear condition, oil condition
Reason for examination	Routine or special analysis: General evaluation and response to specific questions

➔ **Note:** More about the relationships under "Q&A".



? HOW DO WE AVOID DELAYS AND OPTIMISE OUR LUBRICANT EXAMINATIONS?

OELCHECK lubricant and operating fluid analyses are an important element of our proactive maintenance. But from time to time you have questions for us before starting an examination or sending a laboratory report. How can we help you avoid these delays, optimise your workflow and achieve even greater accuracy in your analyses?

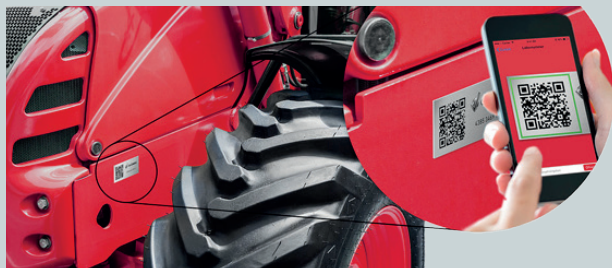
✔ **You rightly expect maximum accuracy from the OELCHECK tribologists' diagnoses. But just like a doctor assessing a patient, we are dependent on your information about the "patient". If we have your comprehensive and correct information at our disposal, there is no need for queries and our diagnoses are even more precise.**

Complete information is half the battle!


Every detail counts! Therefore, please fill out our sample consignment notes carefully. Special consignment notes are available for a wide range of applications. Each OELCHECK analysis set is accompanied by a corresponding sample consignment note. The notes are logically structured, clear and easy to understand.

The easiest way is always to use the OELCHECK app

The easiest and fastest way is to enter the sample via our **OELCHECK app** and our practical, oil- and weather-resistant **QR code stickers**, which contain all of the machine information that cannot be changed and which you attach directly to the sampling point.



Don't have your QR sticker(s) yet?

You can create the stickers yourself under **LAB.REPORT** in the "Machines and Components" area by clicking on the icon  or simply call us on tel. +49(0)8034-9047-250 or send us an e-mail to: sales@oelcheck.de

The only time that extra effort is required to fill out the form is when you are sending in a sample of a specific machine/component for the first time. The master data of the machine or component is already created in our system from the next follow-up inspection. The corresponding information on the sample consignment note can therefore be omitted. Instead, however, be sure to enter the 'Previous lab number'. This takes over the information already available for the current sample.

Some of the information we request from you using the sample consignment note may seem banal. But there is a plausible reason behind every single one – to your advantage!

+ Your company's internal machine designation

Whether machine, component or vehicle – they all have an individual name! For this reason, please state the name, inventory number or, in the case of vehicles, e.g. the vehicle registration number or chassis number that you use internally in the company. This is the only way to prevent confusion with other systems.

- ➔ Your employees identify the individual machines quickly and reliably with each subsequent sampling.
- ➔ In the laboratory, we can clearly link the test results of a current sample with the historical data of previous samples and identify trends.

+ The machine and its components

We need the name of the manufacturer, the type of machine or vehicle and – if available – the serial number. If, for example, it concerns your "Engel injection moulding machine type SGM EX 7050/650K", please state not only "Injection moulding machine", but its complete designation. If you are not familiar with this, please check on the machine (nameplate) or in your system. It is possible that machine-specific or model series-specific limit values for the oil apply. We can then include them in the evaluation.

If, for example, oil from a transmission is to be examined, specify the type of transmission and other design features, such as the type of lubrication. Our sample consignment note specifies the corresponding questions for you.

- ➔ Thanks to your information, we can include any special features of the machine or component and their requirements for the lubricant in the evaluation.

+ The lubricant or operating fluid

"Lucky dip bags" are exciting – but anything but helpful! We require the correct and complete designation for your samples of oils, lubricating greases, fuels, coolants or AdBlue®. So please do not just put "hydraulic oil" on the sample consignment note, but the manufacturer's name, type and viscosity, such as "Shell Tellus S3 M 46". However, small additions to the product name, which may seem unimportant to you, allow us to precisely assign them to a fresh oil reference and thus to make precise comparisons, which will help you in your maintenance plan.

- ➔ This provides us with important information about the constituents and properties of the sample.
- ➔ Only in this way can we precisely compare the values determined during the analysis of the sample with those of the fresh product and evaluate them on the basis of our machine-specific limit value tables.

+ The operating conditions

In which environment does the machine operate? Is it dusty, humid, extremely hot or cold? Does the machine come into contact with cleaning agents or aggressive chemicals? Does it run in shifts or continuously, are there shock loads or vibrations?

→ If we detect certain impurities or an exceptionally high degradation of additives in a sample, for example, it is possible to draw conclusions about their origin or cause more quickly.

+ Reason for the investigation

Is this a routine check? A trend determination? Was there any damage or deviations from normal operation, such as increased oil temperature, deposits, foaming or leaks?

→ Especially in the event of deviations and damage, we need your corresponding information. This is the only way we can get to the bottom of things and help you solve problems efficiently.

+ Quantities, runtimes and campaigns

The big picture also includes information about: the volume of the product used, its operating time, the total running time of the machine, an indication of any oil change, refilling or switching to another lubricant or operating fluid.

→ The oil operating time, for example, assists us in assessing ageing processes. Are these within the normal range or has the oil aged unusually quickly?

→ If you have switched to another product, this information can be used to explain any reaction products in the sample. This, in turn, results in an urgent need for action on site in some cases.

+ Sampling when, where and how

Please always state the date of sampling! And define specific sampling locations. Samples should always be taken from the same place and using the same method.

→ With the help of the date, we can check the regularity of the checks, especially when determining trends. It also indicates if the sample may have been taken a long time before shipment. In this case, we receive outdated information that only reflects the current condition of the lubricant used to a limited extent.

→ Only when samples are always taken from the same place do we get information that can be compared with the values from previous analyses.

OELCHECK also answers your questions on the topics of lubricant and fuel analyses as well as tribology.
Contact us by e-mail at info@oelcheck.de or by fax on +49 8034 9047 47.

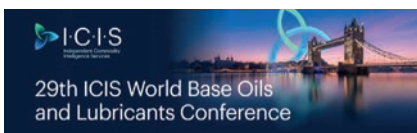


COME AND MEET US!

There's no missing the new OELCHECK trade fair stand. With its modern design, lighting and strong colours, it is a great calling card for our company. And trade fair visitors who aren't familiar with us yet will know what OELCHECK is all about straight away: "Analysing and evaluating lubricants and operating fluids – Independent, fast, reliable".

We will be appearing as an exhibitor and/or speaker at the following trade fairs and conferences in 2025. Will you be there too?

If so, we would be delighted if you could arrange a meeting with us in advance (sales@oelcheck.com), simply contact us or drop by our stand at the trade fair!



12-14/02/2025 | London, UK



08-09/04/2025 | Stuttgart



07-13/04/2025 | Munich



07-09/05/2025 | Innsbruck, AT



13-15/05/2025 | Rosenheim



18-22/05/2025 | Atlanta, USA



16-19/09/2025 | Husum



16-18/09/2025 | Düsseldorf



29-30/10/2025 | Munich



OELCHECK INFORMS:

IMPORTANT INNOVATIONS IN THE ANALYSIS OF TRANSFORMER OILS!

Users of our all-inclusive analysis sets for transformer oils now benefit from two important innovations!

- A new, more powerful instrument for the analysis of dissolved gases in transformer oils has been installed in the OELCHECK laboratory. It operates according to the method of complete degassing of the sample and delivers even more accurate measurement results.
- The sampling of transformer oils has been significantly simplified. No more time-consuming use of a glass syringe!

Gas-in-oil analyses with the new TOGA GC 2

Five different all-inclusive analysis sets are available for examining transformer oils. Gas-in-oil analysis according to ASTM D3612 is included in every set. So far, we have used a headspace gas chromatograph. To do this, the oil sample was transferred to a small glass vessel containing argon and heated out. The escaping gases were then analysed.

When analysing with the new TOGA GC 2 gas chromatograph, this 'diversion' of the sample is no longer necessary. The device sucks the oil sample directly into a vacuum chamber and thus extracts the dissolved gases from the oil. An integrated gas chromatograph then analyses the gases. The measurement process is fully automatic. As with the predecessor of the device, the gas analysis and determination of the total gas content meets the ASTM 3612/IEC60567 standard.

Different insulating oils can be measured with a single calibration. It is decoupled from the type of oil. Particularly when both mineral oil-based and ester-based oils are tested, full degassing before measurement leads to more accurate results. The laboratory report now shows eleven gases instead of the previous nine. In addition to nitrogen, oxygen, hydrogen, carbon monoxide, carbon dioxide, methane, ethane, ethylene and acetylene, there is also propane and propylene. These two gases are the "long-term thermal memory" of the transformer oil. Due to the high solubility and the tendency to have higher boiling points, their determination allows good conclusions to be drawn about the long-term thermal load of the oil.

For our laboratory operations, the new TOGA GC 2 is the ideal solution. It is much easier to use than its predecessor. Sample preparation requires less labour and time.

Once a sample arrives in the laboratory, OELCHECK lab technicians take 50 ml directly from the sample container using a glass syringe. This is placed on the autosampler of the new device and the



gas-in-oil analysis starts.

An autosampler allows batches of 16 samples to be analysed. This in turn increases the capacity of the OELCHECK laboratory.

Sampling without a glass syringe

At the same time as the new device is commissioned in the OELCHECK laboratory, sampling on site is also becoming significantly simpler. There is no need for time-consuming sampling using a glass syringe.

From now on, all OELCHECK all-inclusive analysis sets for transformer oils will only be delivered to customers with a 1-litre aluminium bottle. The aluminium bottles should be filled to the brim with the sample to avoid prolonged exchange of the oil with the ambient air.

Many tests and measurements in practice have shown that correct sampling using the gas-tight aluminium



bottle is not only significantly easier and less prone to errors than using the glass syringe. In addition, no significant differences in the values can be seen in the measurements. Consequently, for many customers, only sampling with the aluminium bottle is relevant and is accepted and implemented accordingly by the service teams.

Explanations on correct sampling are enclosed with the analysis sets and are available for download at oelcheck.de.



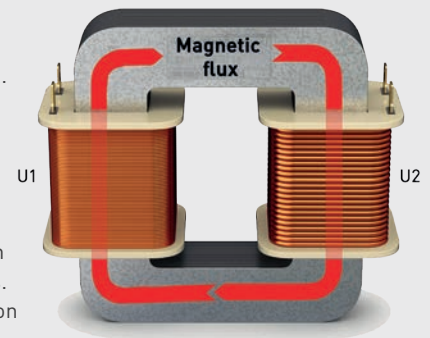
In a nutshell: Transformers, their oils and gas-in-oil analysis

Large transformers are performance-critical components of the power supply network. A transformer consists – put simply – of a magnetic circuit, an iron core around which the conductors of at least two adjacent circuits are routed in coils, usually with different numbers of windings.

In order to insulate the live parts, the copper wires are varnished with synthetic resin or wrapped in films or special papers. The transformers are filled with insulating oils based on mineral oil, ester oil or silicone oil for additional protection against potential voltage surges. These oils must not only insulate, but also cool, be resistant to low temperatures and oxidation and harmonise with the winding and insulating materials.

Transformer oils are used for years and age slowly. However, if electrical and/or thermal faults occur in the transformer, this will cause the oils and insulating materials, especially the special papers, to decompose. These fault events generate gases. These are soluble in the oil like air from the atmosphere up to a certain concentration. Gas-in-oil analysis determines and quantifies these gases. Every OELCHECK analysis set for transformer oils also includes a gas-in-oil analysis. The values determined and their diagnosis are recorded in the laboratory report according to an evaluation procedure described in the VDE standard.

Depending on the type and intensity of the gases dissolved in the oil, the different types of faults in the transformer can be identified based on the results. This in turn allows conclusions to be drawn about the consequences for the oil, paper insulation and the transformer itself. Ultimately, gas-in-oil analyses make a decisive contribution to the operational safety of the transformers and the energy supply.



TRIBUTE TO DR THOMAS FISCHER, OUR SCIENTIFIC DIRECTOR

"The great thing about my position at OELCHECK is that there is always something new to discover. Even after many years in the company, I continue to gain new and exciting insights. We don't stand still!"

Dr Thomas Fischer is an authorised signatory and our company's scientific director. In recent years, he has made a decisive contribution to OELCHECK's development into the most modern and leading laboratory for lubricant and operating fluid analyses in Europe.

Dr Fischer joined our company in 2004 as laboratory manager. Back then, his team of six lab technicians and one trainee was still quite manageable. But things progressed quickly. Our company was consistently on a successful course and Dr Fischer handed over the operational management of the laboratory to Max Schuldeis in 2010.

As scientific director, Dr Fischer has now been shaping the technical development of OELCHECK for 14 years. Today, our laboratory has more than 130 devices for a wide range of analytical procedures for lubricants and operating fluids. With his team, Dr Fischer is not only



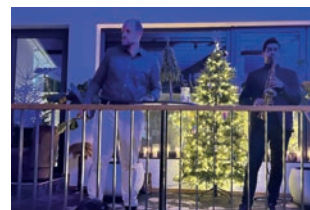
responsible for monitoring existing procedures and developing new ones. His responsibilities also include method optimisation, selection and commissioning of new measuring instruments, cooperation in quality management, active participation in DIN and ASTM working groups for the standardisation of measuring methods and the organisation of international interlaboratory tests.

Dr Thomas Fischer is our scientific director – but for OELCHECK employees he is also a valued mentor, an inspiring colleague and for many a role model who shows how great things can be achieved with skill, passion and a touch of levity.

MAGICAL MOMENTS AT THE OELCHECK WINTER WONDERLAND

The 2024 Christmas party at OELCHECK was a complete success! Our facility management team created a wintery atmosphere in the cafeteria and on the terrace: Stands serving tasty treats, mulled wine, and highlights such as Bavarian curling, mini-curling and a popular photo booth made sure there was plenty of top entertainment. A DJ and saxophone player got the dancefloor jumping.

The whole team got to let their hair down and enjoy an unforgettable evening together. The perfect way to ring out the year!



OUR THANKS TO KATHRIN HEUMANN

Kathrin Heumann started her training at OELCHECK in 2014 as an office communications clerk. After successfully completing her training, she went straight to sample collection. This requires maximum concentration, accuracy and speed. Once the samples have arrived at OELCHECK, they are unpacked. During the subsequent 'reading-in' process, their onward journey to the individual examination stations in the lab is then decided. Kathrin Heumann and her colleagues also record the data from the sample consignment note themselves, enter any additional comments from the senders and ensure that the lab report is later sent to the correct contact person.



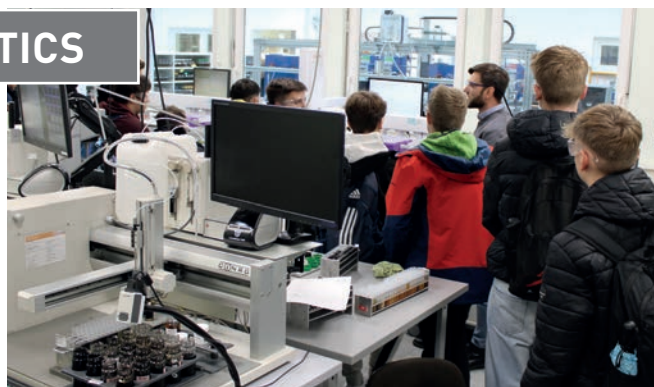
Since her first day at OELCHECK, Kathrin Heumann has worked incredibly hard and, with her valuable suggestions for improvement, continues to contribute to the optimisation of work processes and trains almost all new colleagues!

A DIVE INTO THE WORLD OF ANALYTICS

STUDENTS VISIT THE "OIL UNIVERSE"

Sharing knowledge with plenty of excitement and lots of fun! Two groups of students visited us in August and November 2024. The programme included an exclusive tour of the OELCHECK laboratory. Accompanied by lab manager Max Schuldeis, the journey of discovery became an unforgettable experience. The young visitors were able to follow the typical path of a lubricant sample through our laboratory. Our guests showed a great deal of enthusiasm. And at the end of the tour, when they were allowed to get involved themselves at an "analysis station" set up specifically for them, they could not wait to get stuck in.

To round off the event, each guest received a bag of small gifts and a delicious lunch in the OELCHECK cafeteria.



A mother's feedback speaks for itself: "My son was absolutely thrilled! He was beaming from ear to ear and chatting away. He can't wait to do his holiday job with you when he turns 15. You really did a great job of explaining everything and I think it's particularly important that older children can take part in visits like during their holidays, for example."



OELCHECK INVESTIGATES

ADBLUE® AND DAMAGE TO SCR CATALYTIC CONVERTERS

AdBlue® is the technical prerequisite for operating modern diesel engines with exhaust gas after-treatment systems. However, if the AdBlue® used is “contaminated” or “unclean”, it can become a serious hazard to the SCR catalytic converters (selective catalytic reduction). In the OELCHECK laboratory, high-precision analysis is therefore not only used to check AdBlue® quality, but can also help in the event of problems or even damage to SCR catalytic converters related to the use of urea solution. The values determined in the laboratory clearly indicate the causes. And it is becoming increasingly clear: In many cases, the specifications for the correct use of the urea solution have not been observed!

AdBlue® from dubious sources

The components of AdBlue® are clearly defined in the standard ISO 22241-1*. It consists of 32.5% high purity urea dissolved in deionized water. The addition of colouring to the crystal clear liquid is possible. All other elements are only allowed in an extremely limited extent.

At first glance, the composition is simple. A word of caution, though! Above all, do not risk any contamination or even quality defects:

- Make sure that the product definitely complies with ISO 22241-1!
- Please do not start your own production from nitrogen fertiliser and tap water!
- ➔ OELCHECK reliably determines whether an urea solution complies with ISO 22241-1 with the all-inclusive analysis set 4 AB.
- ➔ OELCHECK indicates any foreign substances detected during an analysis in the laboratory report as well as the sum of all insoluble parts in mg/kg.

If AdBlue® contains, for example, unsuitable urea, for instance one that is based on nitrogen fertiliser, the SCR catalytic converter is literally poisoned. If deposits are then formed on the injection nozzle due to the foreign matter, these will impair the spray pattern. The catalytic productivity (turn-over number (TON)) will fall. The efficiency of the exhaust gas aftertreatment is no longer guaranteed.

If, for example, AdBlue® is contaminated beyond the permissible limits with magnesium, calcium, sodium, potassium or even iron, this indicates that normal tap water was used during production.

AdBlue® only likes PET containers

The clear, transparent urea solution is supplied in plastic containers. Smaller containers are made of PETG or polyethylene terephthalate, commonly referred to as “PET”.

For larger units such as containers, HDPE, High Density Polyethylene, is used. The special OELCHECK 1-litre sample containers for AdBlue® are also made of polyethylene – and for good reason.

- ➔ Alternative containers such as glass, aluminium or other metals should not be used. This also applies to containers for refilling or filling.

- ➔ With its high silicon content, AdBlue® leaches silicon from glass.
- ➔ Some metals corrode quickly with AdBlue®. Increased contamination with aluminium, iron or non-ferrous metals such as copper, nickel or zinc, for example, can then be detected in the OELCHECK lab. Above all, the latter are really poisonous to catalytic converters in increased concentrations. If the “wrong” containers are used to send a sample, a faulty finding can lead to degradation of the sample.

AdBlue® and the pitfalls of storage

It goes without saying that AdBlue® should be protected from direct sunlight and not stored at extreme temperatures. The containers must be well sealed to prevent dirt from getting in and to stop the product from concentrating due to evaporation.

A word of caution, though: AdBlue® breaks down into ammonia over time. The urea solution has a shelf life of approximately 18 months from the date of production. The date of production should be shown on the container label! A so-called “minimum shelf life” does not apply!

The shelf life of AdBlue® requires **correct storage at a temperature of -5 °C to +25 °C**. Prolonged storage above 25 °C can lead to faster decomposition of the urea. If AdBlue® is stored at temperatures above 30 °C, its shelf life decreases rapidly. The following general rule of thumb applies: The storage stability decreases by six months for every 5 °C over 30 °C. If the product is still used, this may result in damage to the catalytic converter system and the engine.

AdBlue® freezes from -11 °C. Crystals are formed. However, after thawing and once the crystals are dissolved, the liquid can be used. A word of caution, though: AdBlue® expands like water when it freezes and may cause containers to burst.

- ➔ OELCHECK determines the urea content to the nearest decimal point in % for each AdBlue® analysis.



AdBlue® and the dangers of biuret and aldehydes

An SCR catalytic converter usually operates at operating temperatures of at least 260–320 °C and at a maximum of 540 °C. It reduces nitrogen oxide emissions from the engine’s combustion process. AdBlue® is injected into the exhaust system upstream of the catalytic converter. Ammonia is released from the urea solution under the influence of the high temperatures. It serves as a reducing agent and reacts selectively with the nitrogen oxides in the presence of the catalytic converter to form nitrogen (N₂) and water (H₂O).

However, the separation of ammonia also produces biuret, an ageing product of urea. This increases the alkalinity of the urea solution or its ability to neutralise acids in the water. Consequently, this can in turn lead to compatibility problems with the materials in the supply circuit. In addition, a high biuret content indicates when goods have potentially been stored too long. But that’s not all: Under the conditions in the SCR catalytic converter, biuret decomposes to cyanic acid in a violent reaction, and carbon monoxide may also be released. However, these toxic substances should not be released!

Like biuret, aldehydes must only be present in traces in AdBlue®, as released ammonia also has effects on these chemical compounds. Under certain operating conditions of the catalytic converter, aldehydes react with ammonia under water separation to form highly toxic hydrocyanic acid. An increased or excessively high aldehyde content also indicates contamination with urea from nitrogen fertiliser.

- ➔ The formation of cyanic and/or hydrocyanic acid goes unnoticed. To prevent this from happening at all, OELCHECK uses the all-inclusive analysis set 4 AB to determine the present proportions of aldehyde and biuret in mg/kg or weight percent.

CONCLUSION

OELCHECK all-inclusive analyses of AdBlue®:

- provide reliable quality control,
- get to the bottom of any problems with SCR catalytic converters caused by the urea solution,
- minimise any risks associated with large quantities of AdBlue® stored as part of sampling campaigns.



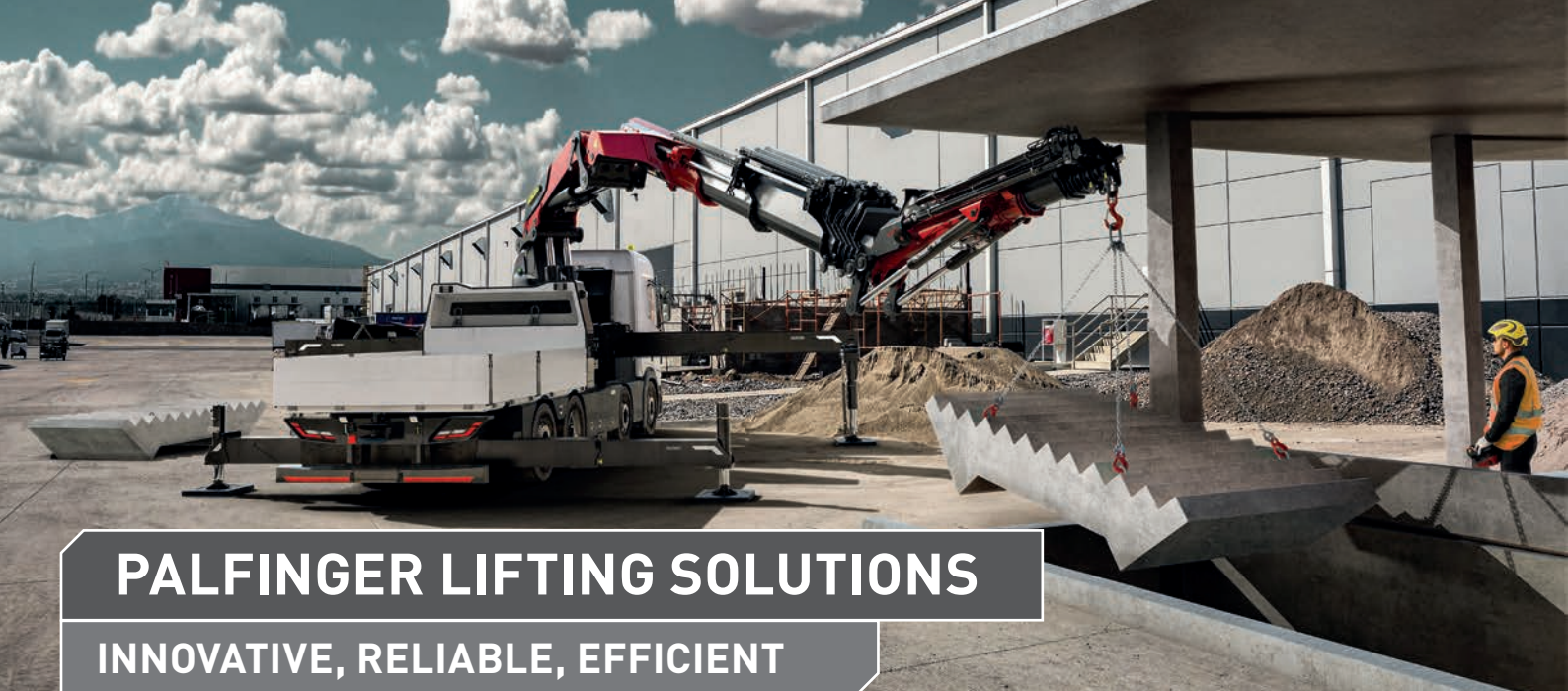
Time-consuming sample preparation for determining the biuret content

OFFERS & ORDERS
Tel. +49 8034-9047-250 • sales@oelcheck.de



All-inclusive analysis sets for your urea solution

	1AB	2AB	3AB	4AB
Test result/procedure				OELCHECK recommendation
Refractive index at 20 °C	x	x	x	x
Urea	x	x	x	x
Insoluble AdBlue®	x	x	x	x
Density	x	x	x	x
pH value	x	x	x	x
Elements, AdBlue			x	x
Alkalinity as ammonia			x	x
Aldehydes				x
Biuret				x
Sample amount required (ml)	400	450	500	650



PALFINGER LIFTING SOLUTIONS

INNOVATIVE, RELIABLE, EFFICIENT

The international technology and mechanical engineering company PALFINGER is the world's leading producer and supplier of innovative crane and lifting solutions. With around 12,500 employees, 30 production sites and a worldwide sales and service network of around 5,000 support centres, PALFINGER meets the challenges of its customers and creates added value from them.



The most well-known product from PALFINGER is still the loading crane. With over 100 models, the company is the world market leader in this segment. But PALFINGER is also the world's largest manufacturer of forestry and recycling cranes in the on- and off-road sector and roll-off skip loaders. Truck-mounted forklifts, tail lifts and truck-mounted lifting work platforms extend the product portfolio. In the field of high-tech railway applications and bridge inspection equipment, PALFINGER is a European technology and market leader. PALFINGER Marine is the world's leading manufacturer of highly reliable, innovative and tailor-made deck equipment and handling solutions for the maritime industry.

Smart complete solutions

Proximity to its customers is one of the secrets to the success of the internationally active company. The challenges they face are consistently taken into account in the constant further development of PALFINGER's product portfolio and comprehensive services. Along the entire production and value chain, the potentials of digitalisation are taken into account in the same way as the impacts on the environment. PALFINGER's lifting solutions provide customers with innovative, smart complete solutions with increased efficiency and top operability. In addition, PALFINGER supports customers so that they can use the systems as sustainably and cost-consciously as possible.

PALFINGER lubricants and OELCHECK analyses

Lubricants for absolute top performance

PALFINGER products are enhanced on a continuous basis. So, particularly high demands are placed on their lubricants, especially the hydraulic fluids. Conventional products only met the requirements to a limited extent. That is why PALFINGER has developed a range of its own hydraulic and gear oils that deliver top performance even under the world's toughest conditions.

Palfinger hydraulic fluids:

- Withstand the high pressure loads of up to 385 bar in the hydraulic system.
- Have a positive effect on cold-starting characteristics.
- Make a decisive contribution to improving controllability.
- Offer outstanding filterability
- Are characterised by their high chemical stability and corrosion resistance, especially in wet conditions.
- Can be used longer due to their formulation and the "PALFINGER Oil Check" system.





Only an annual check at OELCHECK – instead of an annual oil change

Due to the special formulas of PALFINGER lubricants, an annual oil change is no longer necessary. But: PALFINGER strongly recommends that customers perform an annual oil check. The tried-and-tested OELCHECK analysis sets are available from authorised workshops. They can be used for both hydraulic and gear oils. At PALFINGER, the sample consignment note has been replaced by a specially developed app to increase user convenience and avoid any errors in data transmission.

OELCHECK analyses lubricants from all over Europe at its laboratory in Brannenburg. PALFINGER uses the OELCHECK UPS service included in the analysis sets for the quick and easy dispatch of samples.

The laboratory reports prepared by OELCHECK provide information on the condition of the oil and the respective lubricated component. Whether there is moisture in the system, increased wear, contaminated oil or mixtures – with the comprehensive analyses, changes in the condition are immediately detected and commented on, enabling the PALFINGER service team to respond quickly.

PALFINGER customers benefit from a whole range of advantages with this system:

- ➔ Extended change intervals and thus an up to 83% reduction in oil consumption. This not only reduces the costs for fresh oil and maintenance, but also makes a significant contribution to reducing CO₂ emissions as a result of the extended oil change intervals.
- ➔ Reduced product downtime thanks to controlled oil quality and component monitoring. As a result, maintenance measures can also be better anticipated and planned.
- ➔ Higher economic efficiency thanks to lower acquisition costs for oils and reduced maintenance requirements.

All the information – any time, any place

In its central PALDesk database, PALFINGER brings together all information about products and services. This data is available at any time, from anywhere in the world. Registered PALFINGER customers have free access to the central PALDesk database and thus to serial number-related documentation, product history, service status and configuration of their device. All information about the oil analyses carried out by OELCHECK is also stored here. The expertise of PALFINGER and OELCHECK has been incorporated equally into the associated recommendations.

Every day, samples of PALFINGER lubricants arrive at the OELCHECK laboratory from all over Europe. After their examination, all laboratory reports are automatically imported into the central PALDesk database using a specially programmed API interface (Application Programming Interface). Here, PALFINGER employees, authorised workshops and customers can access all data and analysis results concerning them at any time and from anywhere in the world. In addition to current analysis data, analyses from the history can also be used, as the interface allows a permanent and continuous exchange of information.

PALFINGER – on the road to success since 1932



As a global company in the field of technology and mechanical engineering, PALFINGER is a world-leading producer and supplier of innovative crane and lifting solutions. The company is headquartered in Bergheim near Salzburg. The PALFINGER Group is 56.4% owned by the PALFINGER family. PALFINGER AG has been listed on the Vienna Stock Exchange since 1999 and achieved record sales of EUR 2.45 billion in 2023.

www.palfinger.com

OILDOC SEMINAR PROGRAMME

THE NEXT DATES

28–29/01/25	Fundamentals of lubricant application Module III in the "Certified Lubricant Expert" series. Can be booked individually.
04–06/02/2025	Lubrication and oil monitoring for turbines and turbo compressors
18–20/02/2025	Fundamentals of lubricant application I Module I in the "Certified Lubricant Expert" series. Can be booked individually.
11–12/03/2025	Damage to bearings, gears and motors – causes and solutions Module IV of the "Certified Lubricant Expert" series. Can be booked individually.
18–19/03/2025	Lubrication and oil monitoring for stationary gas engines
20–21/03/25	Lubrication and oil monitoring for compressors
25–26/03/25	Certified hydraulic oil specialist *OilDoc Certificate Course*
31/03–03/04.	Expert knowledge for lubricant professionals *CLS certificate course – German*
06–09/05/25	Expert lubrication knowledge for lubricant professionals *CLS Certificate Course – English*
20/05/2025	Coolant – The underestimated operating fluid
21–22/05/2025	Lubrication and oil monitoring for combustion engines
03–04/06/2025	Fundamentals of lubricant application II Module II in the "Certified Lubricant Expert" series. Can be booked individually.
30/06–03/07	Machine monitoring by means of oil analysis, advanced course *MLA/MLT II Certificate Course*
16–18/09/25	Lubrication and oil monitoring for turbines and turbo compressors
23–25/09/25	Lubrication and oil monitoring for hydraulics
07–08/10/25	Lubricating greases – Properties, selection and monitoring



OILDOC ACADEMY

Your contact for further training:

OilDoc GmbH
Tel.: +49 8034 9047700
info@oildoc.de

All of the current dates, detailed seminar content and conditions of participation as well as the links to uncomplicated online registration can be found on our website:

oildoc.com/seminare



OilDoc Conference – Event Program 2025 State: January 2025. Subject to change.

DAY 1 – TUESDAY, MAY 13, 2025

09.00 am – 10.00 am	Opening: Petra Bots & Rüdiger Krethe (OilDoc)		
	Plenary lecture: N.N. Senator Apurva Gosalia Fokus Zukunft GmbH & Co. KG		
10:00 am – 10:30 am	Coffee & Snacks		
	Hall 1	Hall 2	Hall 3
10:30 am – 12:30 am	OIL ANALYSIS METHODS	WIND POWER LUBRICATION	SUSTAINABILITY & ECONOMICS
	Oxidation revealed: A deep dive into TOST testing Vincent Bouillon Eurofins BfB Oil Research S.A.	Assessment of blade bearing greases performance with water contamination and grease mixtures Ulf Rieper Shell Deutschland Oil GmbH	Cost reduction with high performance lubricants Dr. Frank-Olaf Mähling Evonik Operations
	Biohydraulic oils in stress test – Can the „Wet“ TOST test provide additional insights? Carsten Heine OELCHECK GmbH	Case analysis of wind turbine gearbox lubrication failure Yesid Antinio Gomez Lubrication Management S.L.	The contribution of lubricant analysis to cost efficient and sustainable machine management Stefan Mitterer OELCHECK GmbH
	Laboratory methods for evaluating the performance and optimization of hydraulic oils in industrial equipment Christoph Schneidhofer AC²T research GmbH	Damage prevention in main bearings and gearboxes – Don't give WECS (white etching cracks) a chance Stefan Bill Rewitec GmbH	Heat transfer fluid recycling – practical experience Vit Henych CLASSIC Oil s.r.o.
12:30 am – 02:00 pm	Lunch		
02:00 pm – 03:30 pm	OIL SENSORS	LUBRICANTS – HEALTH & ENVIRONMENT	VARNISH MITIGATION
	Online monitoring of total water contamination in lubricants combining NIR moisture sensors and optical imaging particle detection Dr. Guillermo Miró Atten2	Lubricants: Update on legal & health aspects Dr. Stefan Baumgärtel VSI Verband Schmierstoff-Industrie e.V.	Correlation between lube oil condition & bearing temperatures Greg Livingstone Fluitec US
	Oil condition monitoring using multi-functional compact near-infrared spectroscopic sensor Dr. Kyoko Kojima Hitachi Ltd	On razor's edge: Balancing performance and sustainability for next-generation hydraulic fluids Dr. Leon Maser Addinol Lube Oil GmbH	Special features of high temperature oxidation – consequences for varnish detection and mitigation Rüdiger Krethe OilDoc GmbH
	Online fluid condition monitoring using both optical and electrical properties sensing Timothy Mack Gastops Ltd.	Lubrication in special environments Ralf Gernitz Shell Deutschland Oil GmbH	Improving production of heat transfer fluid systems with solvency enhancers Jo Ameye Fluitec NV
03:30 pm – 04:00 pm	Coffee & Snacks		
04.00 pm – 06:00 pm	OIL ANALYSIS METHODS	LUBRICANTS & LUBRICATION	OA MANAGEMENT & DIGITALISATION
	Oil Condition Monitoring (OCM) with FTIR spectroscopy – Comparison, challenges and solutions Christoph Schneidhofer AC²T research GmbH	Fluid solutions – Innovative and sustainable industrial oil concepts Wolfgang Bock Fuchs Lubricants Germany GmbH	Digitalization in lubrication – Future proof standards and concept implementation using state of the art technology and AI support Wojciech Majka ECOL Sp. z.o.o.
	Comparing new ASTM methods for FTIR analysis of fluid condition David Swanson POLARIS Laboratories	Development of vacuum lubricants for contamination sensitive environments Fabian Schüler Materiales GmbH	Smart and reliable gearbox monitoring: Driving digitalization to prevent major downtime Andreas Busch Hydac
	New infrared absorption method for field instruments Matthias Winkler CM Technologies GmbH	Influence of operating parameters on the oxidation rate of gear oils in real operation Dr. Lukas Hafner Evamo Pump Technology Solutions PS GmbH	Digital transformation in lubricant monitoring: Data mining and AI readiness for modern organizations Ferenc Pall MOL-LUB Ltd.
6:00 pm – 8:00 pm	COME TOGETHER - ZWICKL RECEPTION		

	Hall 1	Hall 2	Hall 3
09:00 – 10:30 am	<p>OIL SENSORS II</p> <p>Inline viscosity sensors - Guidelines for successful implementation Dr. Alexander O. Niedermayer Micro Resonant Technologies GmbH</p> <p>Asset health insights from In field applications of a multiparameter oil condition sensor Jeffery Lubkowski Poseidon Systems LLC, U.S.</p> <p>N.N. Carsten Giebeler</p>	<p>MWF & CLEANING</p> <p>Process element cooling lubricant – a comparison in performance Anna Hillmann Hermann Bantleon GmbH</p> <p>Ranking of tribological performances of water-based coolants and metalworking fluids Dr. Ameneh Schneider Optimol Instruments Prüftechnik GmbH</p> <p>Monitoring and maintenance of working fluids using specialized devices: Practical experiences Peter Sebok Tribology Ltd.</p>	<p>TURBO EQUIPMENT MANAGEMENT</p> <p>Turbine oil management & handling in refineries Michael Grill OMV Refining & Marketing GmbH</p> <p>Lessons learned for lubricant systems in gas turbines Dr. Bernhard Persigehl Experten-Zentrum für Technik</p> <p>Synergistic approaches: Integrating vibration, oil analysis, and varnish analysis for enhanced gas turbine performance and maintenance Jorge Alarcon Pragma Reliability, Spain</p>

10:30 am – 11:00 am – Coffee & Snacks

	Hall 1	Hall 2	Hall 3
11:00 am – 12:30 pm	<p>COOLANTS & ANALYSIS</p> <p>The shift from conventional to low-conductivity coolants in battery electric Dr. Christoph Rohbogner OELCHECK GmbH</p> <p>Wire corrosion and conductive layer deposits: The development of bench test technology for electric vehicle drivetrains Greg Miiller SAVANT Inc.</p> <p>Coolant analysis: A key to complete asset management Emily Featherston POLARIS Laboratories®</p>	<p>H2-INFLUENCE ON LUBRICATION</p> <p>Lubrication challenges and bearing failures in screw compressors for hydrogen and methane gas transport Dr. Maria Valentne Sutyinszki MOL-LUB</p> <p>Impact of the lubricating oil chemistry on the knock sensitivity of a gas engine running on hydrogen Thijs Schasfoort Petro-Canada Lubricants Inc.</p> <p>N.N.</p>	<p>CONTAMINATION CONTROL</p> <p>Defining the right contamination control strategy Guido Bertels DES-CASE</p> <p>Optimized liquid coalescence for improved water removal from hydrocarbon lubricating oils Dr. John K. Duchowski Hydac FluidCareCenter GmbH</p> <p>Oil cleanliness: Key element to asset reliability Saeed Asiri Sabic</p>

12:30 pm – 02:00 pm – Lunch

	Hall 1	Hall 2	Hall 3
02:00 pm – 03:30 pm	<p>GREASES & GREASE ANALYSIS</p> <p>Modelling of oil separation from lubricating greases with the equation of Carman and Kozeny Gizem Balkiz Ibishükcü Carl Bechem GmbH</p> <p>Criteria based grease analysis screening and advanced sampling techniques Richard N. Wurzbach MRG Labs</p> <p>Modern Grease analysis in industry Jakub Chlodek ECOL Sp. z.o.o.</p>	<p>LUBRICANTS & LUBRICATION</p> <p>Shear stability and thermal performance analysis of engine oils for electric vehicles Angela Tortora, Ducom Instruments (Europe) B.V.</p> <p>Optimal lubrication of roller chains & conveyor chains Alexander Frankenstein FB Ketten Handelsgesellschaft mbH</p> <p>N.N.</p>	<p>OIL ANALYSIS & MANAGEMENT</p> <p>Extended oil change intervals Rainer Schöpf OELCHECK GmbH</p> <p>Condition-based oil sampling – Using data to determine oil analysis testing frequency Lisa Williams Spectro Scientific Ametek</p> <p>Case study of oil condition monitoring – A practical and effective software solution for everything from planning sampling to managing corrective actions Thomas Feischl, eralytics GmbH</p>

03:30 pm – 04:00 pm – Coffee & Snacks

	Hall 1	Hall 2	Hall 3
04:00 pm – 05:30 pm	<p>LAB AUTOMATION</p> <p>The effect of temperature variation on NIR prediction results Dr. Nicolas Rühl Metrohm AG</p> <p>Robotic arm to ASSIST RDE spectroscopy automation Guiseppe P. Adriani Mecoil Diagnosi Meccaniche S.r.l.</p> <p>Maximizing laboratory efficiency: Advantages of high-throughput compact sample aliquoting, analysis, and digitization Rainer Kösters HF Innovation GmbH</p>	<p>LUBRICANTS & LUBRICATION</p> <p>Enhancing lubricant performance with Alkylated Naphthalene Luka Jazbec ExxonMobil Czech Republic</p> <p>A look at the process chain – what comes after metalworking and forming? Focus on cleaning and corrosion protection Kerstin Zübert Hermann Bantleon GmbH</p> <p>N.N.</p>	<p>LUBRICATION MANAGEMENT</p> <p>The impact of oil additives on oil electrical conductivity Dr. John K. Duchowski, Hydac FluidCareCenter GmbH</p> <p>What if? – Assumptions about CO₂ evolution tests for lubricants Dr. Peter Lohmann Hermann Bantleon GmbH</p> <p>N.N.</p>

It's up to you!

You have the choice between different workshops in Rosenheim or Brannenburg and an excursion via cog railway. **IMPORTANT: You have to pre-register for the program (and bus-shuttle when needed) in our event app!**

- ✓ Take part in a **practical oriented workshops** at the OilDoc Academy in Brannenburg and visit the **OELCHECK laboratory** (15 km from Rosenheim, Bus-Shuttle leaves KU'KO at 8:45 am (pre-register!))



WORKSHOP / LAB TOUR AT THE OILDOC ACADEMY IN BRANNENBURG (15 KM FROM ROSENHEIM)

9:30 am – 11:00 am	WORKSHOP A - I Schöpfen Sie das Potential von Schmier- und Betriebsstoffanalysen voll aus – So legen Sie sinnvolle Testumfänge fest (in German) Dr. Andrea Schreiner & Matthias Aßmann OELCHECK GmbH	OELCHECK LAB-TOUR I Test methods in practice
11:00 am – 11:30 am	Coffee & Snacks	
11:30 am – 1:00 pm	Unlocking the full potential of fluid analyses – Defining test scope and utilisation of additional tests (in English) Dr. Andrea Schreiner & Matthias Aßmann OELCHECK GmbH	OELCHECK LAB-TOUR II Test methods in practice
1:00 pm – 01:30 pm	GRAB & GO LUNCH	

OR

- ✓ Take part in a **practical oriented workshop (presented & organized by Fluitec)** at the KU'KO Rosenheim



WORKSHOP AT THE KU'KO ROSENHEIM - PRESENTED BY FLUITEC

9:00 am – 10:30 am	Hall 1 Optimizing lubricant programs for rotating equipment Part I Jo Ameye, FLUITEC Rüdiger Krethe, OilDoc GmbH Sanya Mathura, Strategic Reliability Solutions Elona Rista, Solar Turbines
10:30 am – 11:00 am	Coffee & Snacks
11:00 am – 12:30 pm	Optimizing lubricant programs for rotating equipment Part II Jo Ameye, FLUITEC Dr. Ludger Quick, previously Siemens Energy Greg Livingstone, FLUITEC
12:30 pm – 01:30 pm	GRAB & GO LUNCH

More details on this special workshop will be published soon!

OR

- ✓ **Excursion:** Cog railway tour to the top of the Wendelstein (1,723 m above sealevel) incl. technical information on the traditional cog railway, „White Sausage Express“ & easy hiking the Summit & Panoramic Trail (optional)

Otto von Steinbeis achieved a pioneering engineering masterpiece with the construction of an electric cog railway on the Wendelstein between 1910 and 1912. The journey up to the Wendelstein is an unforgettable experience in itself as it passes through lush flowering alpine meadows, shady forests and over jagged cliffs!

Meeting point: 9:30 am at Brannenburg valley station, Bus-Shuttle leaves KU'KO at 8:45 am (pre-register!) ending at 1:30 pm at Brannenburg valley station



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Location

KUKO, Conference Center (www.kuko.de), Kufsteiner Strasse 4
D-83022 Rosenheim (inner city)
50 km from Munich, 70 km from Salzburg

Rosenheim is a central spot on the way between Munich and Salzburg and has a lot to offer. You will enjoy your stage in one of the most beautiful towns of Bavaria.

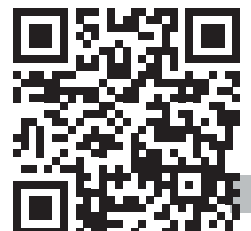


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Customer focus



Innovation



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Independence



All-inclusive analysis kit



International

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