



QuickOIL

OIW-ANALYSIS

Fast online oil-in-water monitoring.
For every kind of oil, fat and grease.

Easy. Fast. Reliable.



RELIABLE ONLINE OIL-IN-WATER DETERMINATION.

A leakage of oil, fat and grease into process and waste water not only results in product losses. Moreover, the treatment of these water is very expensive and problematic. LAR's fast OIW-Analysers provide tailor-made solutions.



Oil and fat separator: Free oils on the water surface can be easily skimmed off. On the contrary, emulsified or dissolved oils will flow freely in the cleaning process and hence, cause severe problems in water treatment.

Oils and fats - of animal, vegetable or mineral origin - are the main components for a variety of products such as fuels, edible oils or fuel oils. In production processes it is quite possible that some of the oils or fats leak into the process and waste water. A large part of the costs that an oil leakage and the attempt to purify the contaminated water brings with, can be saved by the use of appropriate online OIW-analysers (oil-in-water).

Preventing product spills. Optimizing processes.

During the refinement of oil and fat a leakage results in a shock load which may cause severe problems in the downstream waste water treatment. Moreover, organic contamination would lead to damages in pipes, boilers and heat exchangers. In the worst case it leads to a failure of the entire production plant.

A fast and reliable Oil-in-Water method is indispensable to take countermeasures.

What is oil actually?

There is no clear answer to this question because oil is not a chemical substance. Oil is a collective term for viscous, sticky and fatty hydrocarbon substances. Oils and fats are extracted from raw materials, such as seeds and animals fats. Mineral oils are processed in oil refineries, where tons of steam and hot water are being used. Their purity is of big concern and requires fast and reliable analysis methods.

Basically, oil is hydrophobic and thus it cannot be mixed up with water. Oil can be present as free oil, as an oil sheen and / or as tiny droplets. But at an increased temperature, in turbulent conditions and when some process solvents are leaked into

Oil, fat and grease can be easily determined with the oxidation at 1,200°C.

the water, oil can be dissolved or gets emulsified. As the water temperature slowly drops, the emulsified oil starts to separate, thickens, hardens and solidifies. Oil becomes fat. The typical solidification range depends on the type of oil, e.g. palm oil at 31 to 41°C. As a consequence, a layer of fat is built up in process pipes and/or sewer systems, restricting the water flow.

It is extremely difficult to clean oily and fatty waste water. Whilst free oil rises to the water surface where it can easily be skimmed, the emulsified and dissolved oil flows untreated through the oil and fat separator.

Common OIW methods and their limits.

Most online oil-in-water analysis methods are based on an indirect measurement and are only suitable for a certain type of oil (fluorescence) or respective oil droplets (scattered light principle) or dissolved oils (spectroscopy).

The measuring results need to be correlated to the applicable oil-in-water laboratory method. This is a time consuming process and the reproducibility of the results is often disappointing.

It becomes really challenging when the oil-in-water composition varies frequently over time and when it contains a mix of different unknown types of oils. As a result, these water cannot be determined by common indirect measurements.

Moreover, due to the multitude of wetted parts used, many OIW methods are not suitable for online measurements. These parts require huge cleaning and maintenance efforts.

The alternative: A carbon counter.

Direct determination of all oils and fats.

A TOC analyser directly determines all hydrocarbons in water and hence all kind of oils and fats - independently of their origin, composition or

consistency. Generally, in most applications the amount of carbons that is not part of oil or grease groups, is negligible.

LAR's solution: QuickOIL.

For the determination of higher concentrations, many online analysers have to dilute the sample with demineralized water. Due to the hydrophobic characteristics of oil, dilution techniques are not applicable.

Furthermore, oils and fats cause absorption and adsorption on wetted parts leading to carry-over and memory effects. This increases the response time resulting in a slower recovery after a peak contamination.

LAR's QuickOIL does not need any dilution or pre-treatment of the sample. There are only three wetted parts in the analyser, that are in contact with the sample - and these parts are being flushed with clean water after every measurement cycle.

The entire oxidation power of the QuickOIL ranges up to 50,000 mg/l TOC. Thus, LAR's ultra high temperature combustion at 1,200°C is way ahead of common thermal oxidation methods.

On the following pages you will learn more about the advantages of QuickOIL and how it works.

AT A GLANCE

- Oils and fats in process or waste water indicate product spills.
- Water contaminated with oil or fat is difficult to clean.
- Common methods measure OIW indirectly and are limited for online monitoring.
- A carbon counter like the QuickOIL covers all kinds of oils and fats.
- QuickOIL determines the OIW content directly without dilution or memory effects.

THE ANALYSER.

We have something against Oil-in-Water. QuickOIL is fast and accurate.

Warm, warmer, hot.

Tracking oils, fats and grease at 1,200°C.

The catalyst-free ceramic oven is the centrepiece of the QuickOIL. At 1,200°C, it reliably dissolves all carbon bonds and thus enables a complete analysis of samples. Despite the high temperatures used, absolute safety is guaranteed in all surroundings. For this purpose, the QuickOIL can be delivered with a number of different housings, depending on the intended location. That way the analyser itself can be safely positioned at high corrosive places as well as in Ex-Zones.

The building blocks principle for a tailor made measurement instrument.

The modular system offers high flexibility. When your application demands it, you can measure up

to six different sample streams with one machine for example. Furthermore, it can be decided whether to build in additional detectors to determine the TOC, TN_b and COD parameters alongside measuring the OIW value.

The QuickOIL.

Ultra quick measurements and maintenance.

The OIW measurement takes place in less than 3 minutes. Thereby, short measurement value peaks can also be reliably shown. The maintenance service that is required is also fast: Less than 30 minutes per week are necessary. The analyser's availability is over 98%. Moreover, all areas of the analyser have been designed for easy maintenance: From the filterless sample extraction with the patented FlowSampler® (↘ Fig. 2), by way of the generously measured and blockage-free tubes, to the catalyst-free high temperature oven with the removable oven foot for the quick disposal of salt residues.

High salt concentrations.

No problem for the QuickOIL.

In contrast to many other analysers, the QuickOIL can handle salt concentrations of up to 10 g/l. There is also an extra high salt option available that can handle up to even 300 g/l sodium chloride (NaCl). That means that even with a high salt concentration the sample does not need to be diluted. This, again, has a positive effect on the accuracy of the measurements.

Who is allowed to do what?

It's up to you to decide.

Through separately programmable user-access levels, you can assign access rights to individual operators. With a 10.4 inch touchscreen, the QuickOIL is easy to operate. Another option would be to control the analyser via remote control using a PC, which is connected to your network.

With the QuickOIL the electronic compartment is separated from the analytical compartment.

The separated compartments are easily accessible.



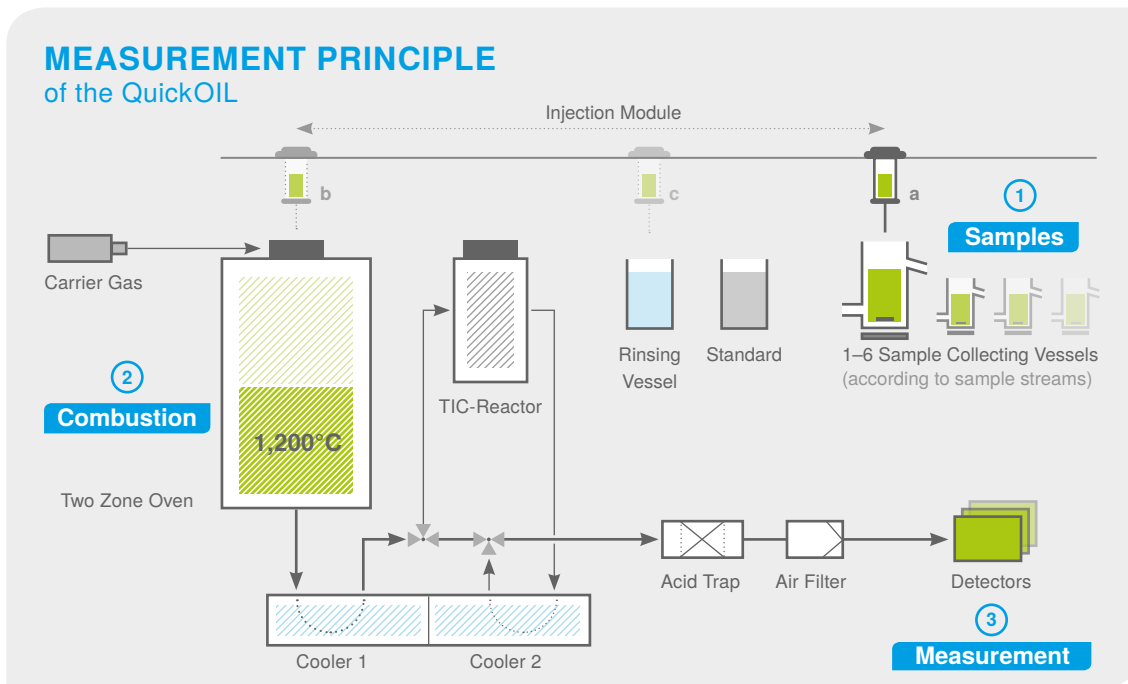


Fig. 1

- 1) Sample transport via injection system
 - a) Extraction of sample from sample stream
 - b) Injection through valve
 - c) Rinsing of the injection needle.
- 2) Combustion, oxidation to CO₂
- 3) CO₂ concentration measurement

THE PRINCIPLE.

Even when the water is dirty - the measurement is clean!

The robotic injection system for the perfect sample dosage.

Inside the analyser, the samples are kept in collection vessels in a homogenous state. The robotic horizontally and vertically moving needle takes an exact sample dose and injects it into the oven through the valve. This patented valve ensures that the oven (→ Fig. 1) stays 100% sealed from the ambient air at all times. After every injection, the needle is cleaned.

Sample extraction: Almost as though taken by hand.

The water flows through the patented FlowSampler®. In the middle of the FlowSampler® there is a stainless steel tube (→ Fig. 2), through which the sample is sucked into the analyser by a pump. The trick: Big and small solid particles, for example sand grains or others, carry on past the tube due to the flow speed. However, all other particles relevant to the measurement are captured, even the solid particles. Therefore, the taken sample corresponds 98% with that of a grabbed sample.

While at the same time it is free of maintenance.

Inside of the ceramic oven: We like it hot.

And it is that hot, that - without catalysts - the inorganic and organic carbon is completely converted into CO₂. It is oxidised with a carrier gas, whose supply is provided by filtered ambient air. Optionally, the QuickOIL can prepare the gas itself. Thus, requiring no extra external gas supply at all. Through the high temperature, the salts present can easily be discharged. They move through the oven in fluid form and are eventually carried out of the oven by the condensate. Finally, they are deposited in a retaining device, from which they can easily and quickly be removed. That way, no salt deposits can form in the oven.

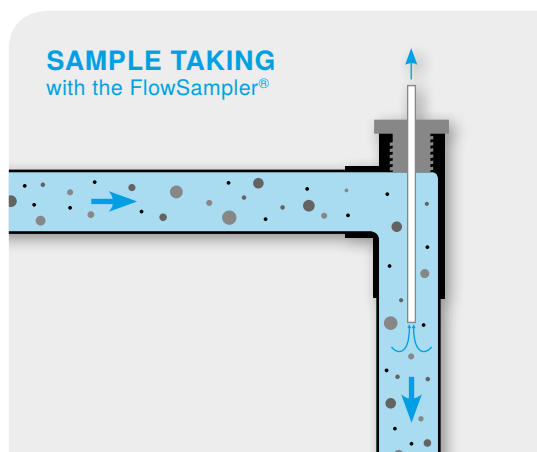


Fig. 2

- maintenance-free
- blockage-free
- representative samples

The maintenance-free and patented sample taking system „FlowSampler®“

QuickOIL AN OVERVIEW

Online OIL measurement for every kind of oils, fats and grease.

QuickOIL continually checks the OIW content of water. Optionally, other sum parameters can be detected, too. At 1,200°C, samples are completely oxidised. Within 3 minutes all carbon compounds and hence, all oils and fats are determined.



Reliable online measurement of all oils and fats with the QuickOIL.

ADVANTAGES & FEATURES

- ✓ exact determination of all hydrocarbons
- ✓ suitable for all kinds of oils and fats
- ✓ proven thermal oxidation principle at 1,200°C
- ✓ response time of less than 3 minutes
- ✓ multi-stream measurements (optional)
- ✓ analyser availability minim. 98%
- ✓ maintenance and service max. 30 min per week
- ✓ exceptionally low maintenance and operational costs
- ✓ Certified housing for EX zones (EX p) (options for ATEX, IEC, etc.)

TECHNICAL DATA

Measurement Technique and Sample Preparation

Measurement Method	Thermal oxidation
Measurement Ranges	0.1–100 mg/l, 2–400 mg/l, 5–2,000 mg/l, 100–15,000 mg/l, 100–50,000 mg/l TOC, further options available
Response Time OIW	3 minutes
Sample Preparation	<ul style="list-style-type: none"> • Maintenance-free particle separator • Optional homogeniser for the continuous homogenisation of samples

Dimensions and Weight

Housing	Steel IP 54, powdercoated
Options	Stainless steel, IP 65, EXp Zone 1 and 2 (ATEX, IECex)
Dimensions	W 600/755 x H 1,062 x D 585 mm
Weight	115 kg (Standard)

Electric and Hydraulic Specifications

Inflow and Outflow	Tube 4,8 mm ID, Tube 8 mm ID, Tube 12 mm ID
Power Supply	230 / 115 V~, 50 / 60 Hz
Analogue Output	0/4–20 mA
Serial Interface	RS 232
Safety	2/6 A internal, 16 A external
Option	Remote control via TCP/IP Protocol

Equipment Devices and Data Output

High resolution and back lit TFT touchscreen graphic display
Autostart function
Self explanatory software
Standard data interfaces to office PC (USB)

ALL cLeAR?

LAR Process Analysers AG: Water is our Element.
We do everything for its protection.

We are the leading manufacturer of water analysers for industrial and municipal waste water treatment, process monitoring, as well as for pure water analysis. Further products in the areas of environmental technology and industrial processing complete our product portfolio.

Unique and state of the art.

LAR's Ultra High Temperature Method at 1,200°C!

LAR formed in 1986, gained prominence through their TOC and COD analysers. LAR is the only company worldwide that, using a high temperature method at 1,200°C, can completely oxidise a sample to accurately determine sum parameters. Particularly when measuring the TRUE TOC with differing concentrations.

LAR is only satisfied once the customer is.

We offer application specific analysers developed by our research and development team. In addition, we maintain close contact with our clients and continually analyse the exact problem areas of every application.

Since the availability of our devices is a deciding criteria, they are constructed in a very user-friendly way. All important areas require little effort

to be accessed and the protective housing offers additional safety.

After Sales. A familiar word to us.

Servicing is carried out by our qualified partners worldwide. Technical support, via telephone or e-mail is available at all times. Additionally, we offer practically orientated seminars and trainings, operator meetings and workshops, that leave no questions unanswered.

We always take a closer look.

Setting ourselves the highest quality standards, we closely cooperate with our partners to fulfill the customers expectations throughout the world. Thus, we regularly evaluate our distributors and when necessary, introduce measures to improve our collaboration with them.

LAR has established its own system for guaranteeing its standards of quality. Not only do we fulfill the requirements of the ISO 9001, but we also work continually on improving our standards of quality. To enable this, we collect information about all applications in our database that are subsequently analysed and evaluated. Regular meetings are held to address every issue guaranteeing highest quality standards.

TOC-ANALYSIS



From complex industry waster water to phamaceuti- cal pure water, our TOC analysers determine the parameter quickly and precisely.

COD-ANALYSIS



With our analysers, the chemical oxygen demand is cleanly and safely deter- mined online, without using hazardous chemicals.

BOD/TOXICITY



We detect the BOD with the plant's own biomass and determine the toxicity with highly sensitive bacte- ria, fast and reliably.

TN_b/TP-ANALYSIS



TN_b and TP are important parameters for waste water treatment. We are the only ones who offer a combina- tion of these with TOC and COD in one system.

FURTHER PRODUCTS



LAR offers a specific solution for nearly all appli- cations. With our protective housings, you are always on the safer side. Learn more about our product range at www.lar.com.

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OIW-ANALYSIS

Quick OIL

AREAS OF APPLICATION

ENVIRONMENT / MUNICIPAL FACILITIES / INDUSTRY

INDUSTRIES

**ENVIRONMENTAL MONITORING / WASTE WATER TREATMENT /
WASTE PROCESSING / PHARMACEUTICAL / LABORATORY / PETRO-
CHEMICAL / REFINERIES / CHEMICAL / COAL AND STEEL / POWER /
AIRPORTS / AUTOMOBILE / PAPER MANUFACTURE / BREWERIES /
FOOD MANUFACTURE / DRINK MANUFACTURE/ MILK PROCESSING**

TYPES OF WATER

**GROUNDWATER / SURFACE WATER / DRINKING WATER /
WATER INFLUENT / WATER EFFLUENT / DISCHARGE CONTROL /
INDUSTRIAL WASTE WATER / DE-ICING WATER / PROCESS
WATER / HIGH SALT CONCENTRATION / OIL-IN-WATER / COOLING
WATER / PURE WATER / BOILER FEED WATER / CONDENSATE
RETURN / PHARMA HPW / PHARMA WFI**