

TOC-ANALYSIS

From complex industry waste water to pharmaceutical pure water, our TOC analysers determine the parameter quickly and precisely.

The measurement system for the rough

- ▶ Combustion at 1200°C
- ▶ Catalyst-free
- ▶ Salt conc. up to 30% NaCl
- ▶ High particle content samples
- ▶ No memory effects
- ▶ Low maintenance

QuickTOC_{ultra}

- ▶ TRUE TOC: 0.1 - 50,000 mg/l
- ▶ Response time: 1 min. (TC)
- ▶ TC/ TOC/ COD/ TN_b
- ▶ Up to 6 sample streams

QuickTOC_{airport}

- ▶ TRUE TOC: 0.1 - 50,000 mg/l
- ▶ Response time: <3 min.
- ▶ Automatic switching between measurement ranges

The patented LAR high temperature method at 1200°C guarantees the complete oxidation of all organic particles. Expensive catalysts are not necessary. In addition to, this its robust technique stands out by its minimal maintenance and operation requirements.

We burn it all. At 1.200°C.

QuickTOC_{uv}

We light up the dark.

- ▶ TOC: 0 - 2000 µg/l
- ▶ TC/ TOC/ DOC
- ▶ UV persulfate
- ▶ Continual measurements
- ▶ Autocalibration
- ▶ Up to 2 sample streams



Specific solutions for pure water

- ▶ Combustion at 1200°C
- ▶ TC/ TOC determination
- ▶ Patented QuickCalibration
- ▶ High sensitivity

QuickTOC_{purity}

- ▶ TOC: 10 - 2000 µg/l
- ▶ TOC: 0.1 - 10 mg/l
- ▶ Process water

QuickTOC_{condensate}

- ▶ TOC: 0 - 2000 µg/l
- ▶ Samples up to 90°C
- ▶ Boiler feed water
- ▶ Condensate return

QuickTOC_{pharma}

- ▶ TOC: 0.1 - 2000 µg/l
- ▶ 21 CRF Chapter 11
- ▶ Pharmaceutical HWP / WFI

QuickTOC_{effluent}

Simple effluent measurements

- ▶ TOC: 0.1 - 200 mg/l
- ▶ Waste water effluent
- ▶ Water course monitoring
- ▶ Surface water monitoring
- ▶ Drinking water

COD-ANALYSIS

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

The online COD measurement system from LAR, based on their innovative process management, enables an accurate and environmentally friendly determination of the COD within 1 min. LAR offers 3 different methods, depending on the application requirements, all of which optimally suit themselves to working online.



QuickCOD_{ultra_o}

The high temperature method

- ▶ COD: 0.1 - 200,000 mg/l
- ▶ Response time: 3 min.
- ▶ Complete oxidation at 1200°C
- ▶ Reagent-free
- ▶ Determination of the real oxygen demand
- ▶ Catalyst-free
- ▶ Salt conc. up to 30% NaCl

QuickCOD_{ultra_i}

The correlation method

- ▶ COD: 1 - 150,000 mg/l
- ▶ TC/ TOC/ COD measurements
- ▶ Measurements without reagents
- ▶ TOC/ COD correlation

With the ultra-series from LAR, operation is through the easy use of a touch screen or optionally it can be controlled via remote over a network con



Elox100[®]

The electrochemical oxidation

The patented method produces and uses OH radicals as oxidants by use of an electrical potential on an electrode.

- ▶ COD: 1 - 100,000 mg/l
- ▶ Response time: <4 min.
- ▶ Electrochemical oxidation
- ▶ Easy operation and maintenance
- ▶ Free from chloride disturbances
- ▶ High oxidation potential
- ▶ No memory effects

- ▶ Waste water treatment
- ▶ Process control

COD. The cleaner methods.

The Elox100[®] works without dangerous or caustic substances, offering a highly safe and simple operation.

BOD/TOXICITY

We detect the BOD using the plant's own biomass and determine the toxicity with highly sensitive bacteria, fast and reliably.



BioMonitor[®]

The miniature WWTP.

- ▶ BOD: 1 - 200,000 mg/l
- ▶ Toxicity: 0 - 100 %
- ▶ Respiration in mg O₂/l * min
- ▶ Response time: 3 - 4 min.
- ▶ High grade decomposition
- ▶ Active sludge activity

- ▶ BOD Monitoring
- ▶ Environmental protection
- ▶ Clarification plant protection
- ▶ For the control and optimisation of clarification plants

The BioMonitor[®] works like a miniature clarification plant. The plant's own active sludge decomposes the content of the waste water and the oxygen necessary to do this is measured. This process takes place in the waste water cascade of the analyser, functioning exactly as it would do in an aeration basin.

The nitrification's respiration inhibition test.

- ▶ Continuous monitoring
- ▶ Self regenerating breeding of bacteria in analyser
- ▶ High sensitivity
- ▶ No extra purchasing of test organisms necessary
- ▶ High reproducibility
- ▶ No memory effects

NitriTox[®]

- ▶ Toxicity: 0 - 100 %
- ▶ Response time: <5 min.
- ▶ Clarification plant protection
- ▶ Protection of the nitrification process of a clarification plant

ToxAlarm[®]

- ▶ Toxicity: 0 - 100 %
- ▶ Response time: <5 min.
- ▶ Surface water
- ▶ Drinking water
- ▶ Ground water
- ▶ Laboratory application

The bacteria, regenerated in the analyser itself, consume oxygen when converting ammonia into nitrate. The biomass is highly sensitive against a huge number of toxic substances.

These substances cause an inhibition of the bacteria's respiration which in turn leads to a decrease in oxygen consumption. From this conclusions can be drawn about the toxicity of the sample.

TN_b/TP-ANALYSIS

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



QuickTOC_{NPO}

4 in 1 - The combi-analyser

- ▶ TOC: 0.1 - 200 mg/l
- ▶ TN_b: 0.1 - 50 mg/l
- ▶ TP: 0.01 - 4 mg/l
- ▶ COD: 1 - 600 mg/l
- ▶ Combustion at 1200°C
- ▶ UV oxidation
- ▶ Molybdenum blue method
- ▶ COD correlation

QuickTON_b

The reagent free TN_b measurement

- ▶ N: 0.1 - 200 mg/l
- ▶ Combustion at 1200°C
- ▶ Response time: 1 - 2 min.
- ▶ Measurement of the sample including particles
- ▶ Consistent recovery from ammonia and nitrate nitrogen
- ▶ High salt content possible
- ▶ Waste water treatment
- ▶ Process control

The LAR high temperature method guarantees a complete oxidation of all nitrogen bonds in a sample. Salt contents are dissolved at this temperature without a problem.

Advantageous in comparison to the wet chemical methods is that the all particle bound nitrogen is completely detected. The high reaction temperature guarantees the consistent recovery from ammonia and nitrate nitrogen.

- ▶ Optional number of parameters
- ▶ No memory effects

- ▶ Process monitoring
- ▶ Industrial and communal clarification plants
- ▶ Process control
- ▶ Water course Monitoring

TOC, TP, TN_b and COD in one analyser.

The measurement system from LAR safely and reliably determines the total organic carbon (TOC), the total phosphor (TP), the total bound nitrogen (TN_b) as well as the chemical oxygen demand (COD).

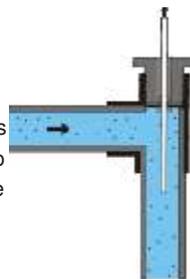
The TP is calculated parallel to the TN_b and TOC measurements. This is carried out by mixing the untampered sample with UV persulfate and then leading it through a UV reactor. The COD is correlated to the TOC.

FURTHER PRODUCTS

LAR offers a specific solution for nearly all applications, With our protective housings, you are always on the safe side.

FlowSampler® Patented Sampling System.

The maintenance-free FlowSampler® is filtration-free and collects solid waste components. Samples are siphoned-off against the main flow direction, so that all large and heavy materials such as sand are separated out, whilst small solid particles are reliably collected. The sample corresponds to approximately 98% of a grabbed sample.



High Salt Option High Salt Concentrations. No Problem.

Based upon the unique LAR high temperature method at 1200°C, salts are completely oxidised and led out of the reactor. Through the special process management and optimised reactor construction lengthy downtimes and the high following costs are minimised.

Samples
up to
30 % NaCl

- ▶ Long-life reactor
- ▶ Clog-free
- ▶ No dilution of samples

Housings

Depending on the requirements of an application, LAR offers a variety of protective housings for protection against corrosion and explosion:

- ▶ IP54 (Standard)
- ▶ Nema 4x
- ▶ ATEX Zone I (T1 to T4)
- ▶ ATEX Zone II (T1 to T4)



ALL cLeAR?

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

LAR's online analysers are used for the continuous automatic monitoring of process water, waste water and surface water protection and are particularly used for applications in the chemical and petrochemical industries, as well as in process engineering:

AREAS OF APPLICATION

ENVIRONMENT / MUNICIPAL FACILITIES / INDUSTRY

INDUSTRIES

ENVIRONMENTAL MONITORING / WASTE WATER TREATMENT / POWER PLANTS / WASTE PROCESSING PHARMACEUTICAL / LABORATORY / PETROCHEMICAL REFINERIES / CHEMICAL / COAL AND STEEL 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 / BOILER FEED WATER HIGH SALT CONCENTRATION / COOLING WATER PURE WATER / CONDENSATE RETRUN / PHARMA HPW PHARMA WFI

Flyer-1E2412



TUEV-certified Company

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Innovative Online Measurements.

