



## QuickTON<sub>ultra</sub>

TN<sub>b</sub>-ANALYSIS

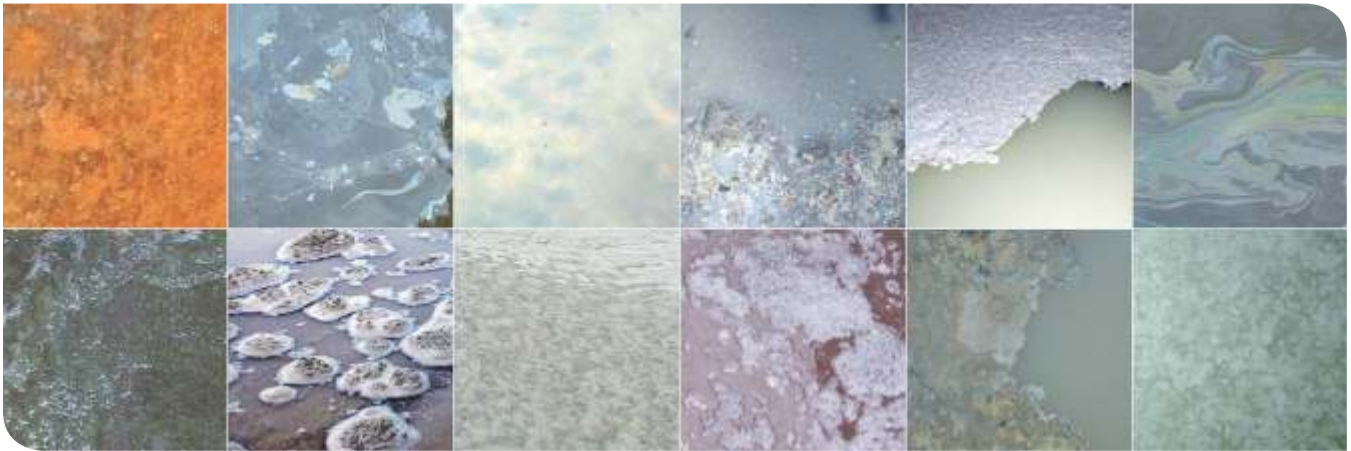
Exact online analysis of nitrogen compounds.  
For every kind of water.

Fast. Precise. Reliable.



# ACCURATE DETECTION OF NITROGEN IN WATER

With the right method, organic and inorganic nitrogen compounds can be quickly and easily measured, even in difficult waters with coarse content.



Whether you measure emulsified water from a flavoring production plant industrial wastewater from dairies, paper or paint factories for discharge control: the QuickTONultra is versatile and able to handle the most diverse applications and types of water.

**Online, continuous monitoring of nitrogen in effluent enables industries and municipalities to monitor for nutrients in discharge and environmental compliance. Continuous nitrogen monitoring enables industry to detect and divert expensive, damaging discharge.**

## Lumps, algae and slime: what a measurement system must deal with.

Industrial wastewater can contain coarse material or high salt concentrations and substances which must be detected and analyzed. Measurement systems need to be able to work continuously and reliably, even in these difficult conditions, without increased maintenance.

## What is TNb and how it is measured?

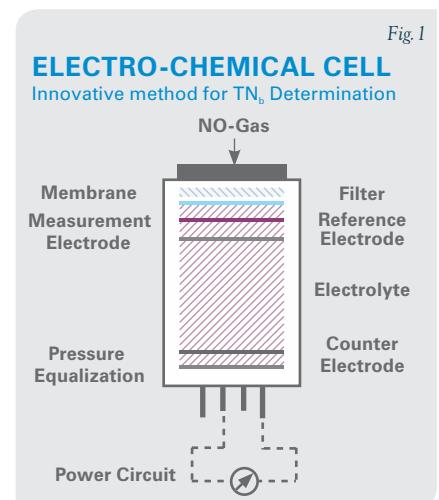
A variety of nitrogen compounds can be present in water that cannot be determined individually. At least not quickly, and not without considerable analytical effort. Total Bound Nitrogen

(TNb) is a sum parameter. It does not “speciate” ammonium, nitrate, nitrite and organic N-compounds. Instead it summarizes all bound nitrogen. It is the most reliable nitrogen parameter and adapts easily for online monitoring in water. TNb is measured by oxidizing the sample and measuring the resulting nitrogen monoxide (NO) with probes, chemiluminescence or through electro-chemical detection (ECD, Fig. 1).

## TNb determination at 1200°C

The European standard EN 12260:2003 describes the conversion of nitrogen compounds to NO through catalytic oxidation above 700°C. However, not all nitrogen compounds can be oxidized this way. Especially, not those containing nitrogen double- or triple-bonds. LAR’s 1200°C method offers the highest temperature analyzer on the market, and reliably oxidizes more complex compounds. The higher the temperature, the higher the accuracy.

The electro-chemical detection is based on the reaction of NO with the electrolyte of the measurement cell, which is separated by a membrane into two half cells. It produces free electrons that are a direct measure of the NO concentration. The three-electrode cell guarantees a constant measurement signal (constant potential). The membrane characteristics ensure the highest selectivity of the detector.



## THE ANALYZER.

**A hot oven: Where temperature makes the difference.**

### Tracking nitrogen at 1200°C.

At 1200°C the catalyst-free ceramic oven reliably breaks all nitrogen bonds, enabling a complete analysis of samples in accordance with EN 12260:2003, ISO/TR 11905-2:1997.

### A modular design 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 analyzer. Detectors can be added to determine TOC and COD alongside TNb. There are several enclosures to choose from, so the QuickTON<sup>ultra</sup> can be used safely in corrosive atmospheres or even in ex-zones.

### Ultra quick and low maintenance.

The TNb measurement takes place in less as little as three minutes, so even brief events can be captured. The catalyst-free and reagent-free design requires less than 30 minutes per week maintenance, for over 98% availability.

### High salt concentrations no problem.

The QuickTON<sup>ultra</sup> can handle salt concentrations up to 10 g/l, and the high salt option can handle up to 300 g/l sodium chloride (NaCl), so no dilution is required. At 1200°C the salts in the sample pass through the oven in fluid form with the condensate. Salts are deposited in the removable furnace "foot" and are easily and quickly be removed.

### Security is assured.

Programmable user-access levels enable the administrator to assign access rights individually. The analyzer can be controlled through the 10.4 inch touch screen, or via remote control on a networked PC.

## AT A GLANCE

- TNb indicates all bound nitrogen compounds in a water sample.
- At 1200°C the sample completely oxidizes without catalysts.
- A reliable analyzer must be able to handle coarse material in water.
- Alternatives are expensive and high-maintenance.
- The ECD method is fast and economical.

With the QuickTON<sup>ultra</sup> the electronics compartment is separated from the analytical compartment.

The separated compartments are easily accessible.



## THE PRINCIPLE.

**Even in complex samples - the measurement is accurate!**

### A robotic injection system for precise sample dosing.

Inside the analyzer, the samples are stirred in collection vessels to maintain a homogeneous state. The robotic sample injection system injects a precise dose into the oven through a valve. This patent pending valve ensures that the oven (Fig. 2) stays 100% sealed from the ambient air at all times. After every injection, the needle is cleaned.

### Inside the furnace we like it hot.

At 1200°C all nitrogen compounds convert to Nitrogen monoxide without reagents or catalysts. Also, to keep operational costs and maintenance low, the QuickTON<sup>ultra</sup> can prepare its own carrier gas from ambient air using the optional gas conditioning unit.

- 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 NO
- 3) NO concentration measurement

## MEASUREMENT PRINCIPLE

of QuickTON<sup>ultra</sup>

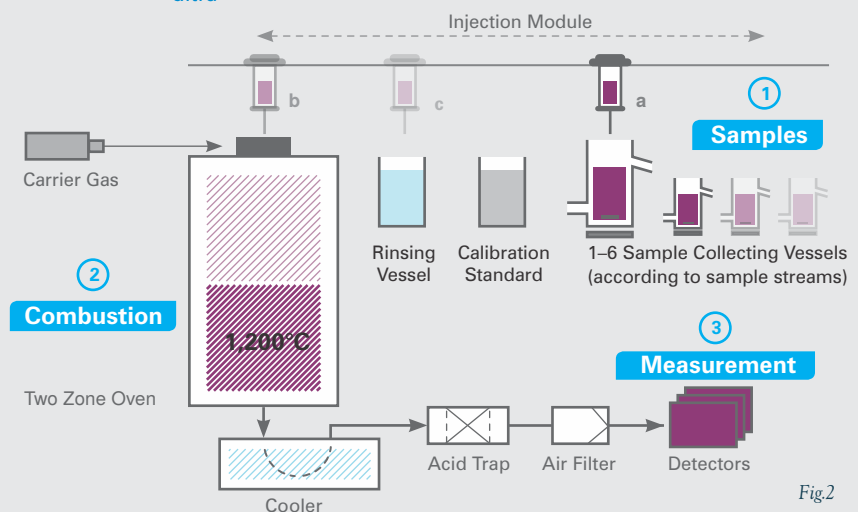


Fig.2

# QuickTON<sup>ultra</sup> AN OVERVIEW

**Exact online TNb for nitrogen compounds. For every kind of water.**

The QuickTON<sup>ultra</sup> continually monitors the TNb content of water. Optionally, TOC and/or COD detection can be added. At 1200C, samples are completely oxidized, and in only three minutes the TNb result is determined.

## TECHNICAL DATA

### Measurement Technique and Sample Preparation

Measurement Method	Thermal oxidation at 1200°C
Meas. Ranges (mg/L)	0.1 to 50, 10 to 200, 100 to 1000
Response Time	3 minutes
Sample Preparation	FlowSampler - Maintenance-free particle separator (recommended)

### Dimensions and Weight

Housing	Steel IP54, powder coated
Options	Stainless Steel, IP 65, EXp Zone 1 and 2 for T3, T4 classes (ATEX, IECEx)
Dimensions	W 24/34 in. x H 42 in. x D 24 in.
Weight	from 125 kg (Standard)

### Electric and Hydraulic Specifications

Inflow and Outflow	Tubing: 1/4 in. ID, 3/8 in. ID, 1/2 in. ID
Power Supply	230 / 115 V~, 50 / 60 Hz
Analog Output	0/4– 20 mA
Serial Interface	RS 232
Safety	2/6 A internal, 16 A external
Internet Capability	LAN, Option for WLAN
Option	Remote control via TCP/IP protocol

### Equipment Devices and Data Output

High resolution back lit TFT touch screen graphic display, 10.4 in.
Autostart function
Self explanatory software
Standard data interfaces to office PC (USB)



Fast, precise and accurate:  
The QuickTON<sup>ultra</sup> is  
always reliable.



## ADVANTAGES & FEATURES

- ✓ exact determination of TNb
- ✓ proven thermal oxidation principle
- ✓ highest combustion temperature available (1200°C)
- ✓ catalyst-free
- ✓ fast response time of 3 minutes
- ✓ multi-stream measurements (optional)
- ✓ individual programmable operator access levels
- ✓ analyser availability minim. 98%
- ✓ maintenance and service max. 30 min per week
- ✓ exceptionally low maintenance and operational costs

### TOC-ANALYSIS

From complex industry wastewater to pharmaceutical pure water, our TOC analysers determine parameters quickly and precisely.

### COD-ANALYSIS

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

### BOD/TOXICITY

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

### TN<sub>b</sub>/TP-ANALYSIS

TN<sub>b</sub> and TP are important parameters for wastewater treatment. Only LAR offers a combination of TOC and COD in one system.

### OTHER PRODUCTS

LAR offers a specific solution for nearly all applications. With our protective housings, you are always on the safer side. To find out more: [www.lar.com](http://www.lar.com)

## LIQUID ANALYTICAL RESOURCE

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