

# LetzTOC

Online TOC Measuring Instrument

# Online TOC Measurement



## Field of application

The LetzTOC measuring instrument is used for online analysis of the total organic carbon (TOC) content.

LetzTOC was especially designed and developed for the monitoring of pharmaceutical water (PW, WFI and pure steam).

Due to the large measuring range up to 4,000 ppb, the analysis of slightly more contaminated samples is also possible. For example, the device can also be used for online monitoring of the final rinse of CIP systems in which higher TOC values may occur, e.g. due to contamination.



## Measuring principle

In the first step the inorganic carbon (TIC) is removed from the water sample by a CO<sub>2</sub>-free carrier gas.

The organic carbon compounds contained in the water are then oxidised by UV light to CO<sub>2</sub>, which is then removed from the water sample by a carrier gas and fed to a NDIR detector. Detection is achieved by irradiation with infrared light, which is absorbed by the CO<sub>2</sub> molecules. The light attenuation is measured by the detector and is directly proportional to the TOC concentration.

In addition to online measurement, there is the option of offline measurement as well as calibration or the System Suitability Test (SST) which is required by the pharmacopoeias.

The recorded TOC measurement values are displayed in a diagram and can be easily transferred to an external computer.

In addition to a high-precision measurement technology the device has also a continuous internal system monitoring.

### Step 1: Stripping and measurement of inorganic carbon (TIC content)



### Step 2: Oxidation and measurement of organic carbon (TOC content)

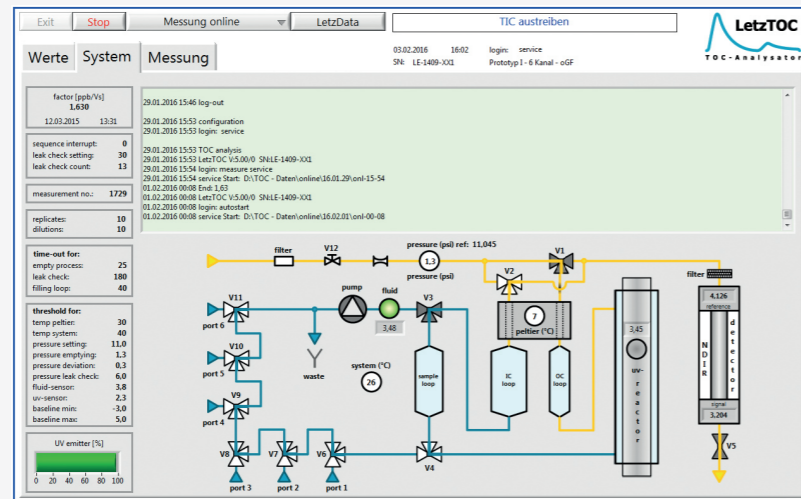


### Features: LetzTOC

- TOC determination by infrared spectroscopy – NDIR detection
- Sequential measurement of two independent sampling points
- Measurement of cold PW and hot WFI
- Display and trend of the TOC value
- Simple data evaluation via USB and archiving with the LetzData evaluation software
- Certified test solutions for performing calibration and system suitability test (SST)

## Control system

LetzTOC is operated via a 12" touch panel, which allows the evaluation of stored data and monitoring of the process at any time. In addition, access to sensitive data and settings is regulated via a secure user administration.



Bedienoberfläche

## Your benefits

- Instead of the conductivity detection often used in online analysers, the LetzTOC instrument uses NDIR spectroscopy to detect organic substances. This greatly reduces the risk of measuring incorrect TOC values: Conductivity sensors, which are equipped without an additional semi-permeable membrane, detect all ions contained in the water and not only the CO<sub>2</sub> formed during UV oxidation respectively the bicarbonate (HCO<sub>3</sub><sup>-</sup>) and carbonate (CO<sub>3</sub><sup>2--</sup>) ions formed by dissociation. In addition, apart from CO<sub>2</sub>, only a few other molecules absorb the wavelength used in the IR detector, so that resulting interference can be virtually ruled out. The CO<sub>2</sub> is also removed from the water before analysis, so that other substances do not even reach the detector in the event of contamination.
- The instrument has two online inputs (one instrument for monitoring two different water samples) as well as additional measurement inputs for offline measurement, calibration and SST.
- Both hot and cold water samples can be measured.
- Simple control via touch panel and numerous helpful operating and evaluation options.
- CFR 21 Part 11 compliant with user level and password control.
- Support option via network connection.

## LetzTOC technical data at a glance

<b>Measuring principle</b>	UV oxidation, subsequent infrared detection of CO <sub>2</sub>
<b>Number of online channels</b>	2 units
<b>Measuring range</b>	2-4,000 ppb (above 2,000 ppb dosage of an oxidising agent is required)
<b>Detection limit</b>	< 5 ppb
<b>Accuracy</b>	± 5% of measurement value
<b>Repeatability/ precision</b>	± 1 ppb < 50 ppb / ± 2% > 50 ppb
<b>Dimensions (W x H x D)</b>	450 mm x 600 mm x 250 mm
<b>Weight</b>	approx. 24 kg
<b>Protection class</b>	IP 54
<b>Power supply</b>	220-240 V/AC ± 10%, 50-60 Hz, 180 W maximum
<b>Ambient temperature</b>	5 - 35°C
<b>Humidity (relative)</b>	10 - 95%
<b>Online mode</b>	auto-start function after power failure
<b>Outputs</b>	<ul style="list-style-type: none"> <li>• Network connection (10/100 Mb/s, RJ45)</li> <li>• Two analogue current outputs 0/4-20mA for TOC value - configurable</li> <li>• Three relay outputs: online, alarm channel 1, alarm channel 2, configurable and NAMUR compliant</li> </ul>
<b>Inputs</b>	Two trigger signals (operating voltage 5V / DC)



# Our Portfolio

EnviroFALK PharmaWaterSystems is your reliable partner of water treatment plants for pharmaceutical and high purity applications.



## PURIFIED WATER

- Stainless steel 316 L or PVDF-HP
- hot water sanitization
- modular design
- simple power extension



## WFI MEMBRANE

- Stainless steel 316 L
- two UV units in pretreatment
- ozonizable ceramic ultrafiltration - Patent
- meets all EMA requirements



## WFI DISTILLATION

- Twin-Systems: WFI & Pure Steam
- Anti-Rouging Concept
- Blowdown < 1%
- Natural circulation process



## PURE STEAM

- Production according to DIN EN 285
- Anti-Rouging Concept
- Blowdown < 1%
- Natural circulation process



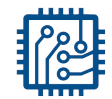
## STORAGE & DISTRIBUTION

- Turnkey Systems
- Tank and loop construction
- Hot and cold storage
- Point-of-use management system



## TOC MONITORING

- Two Online Channels for PW + WFI
- Online Monitoring: Final Rinse
- Infrared spectroscopy by NDIR detection



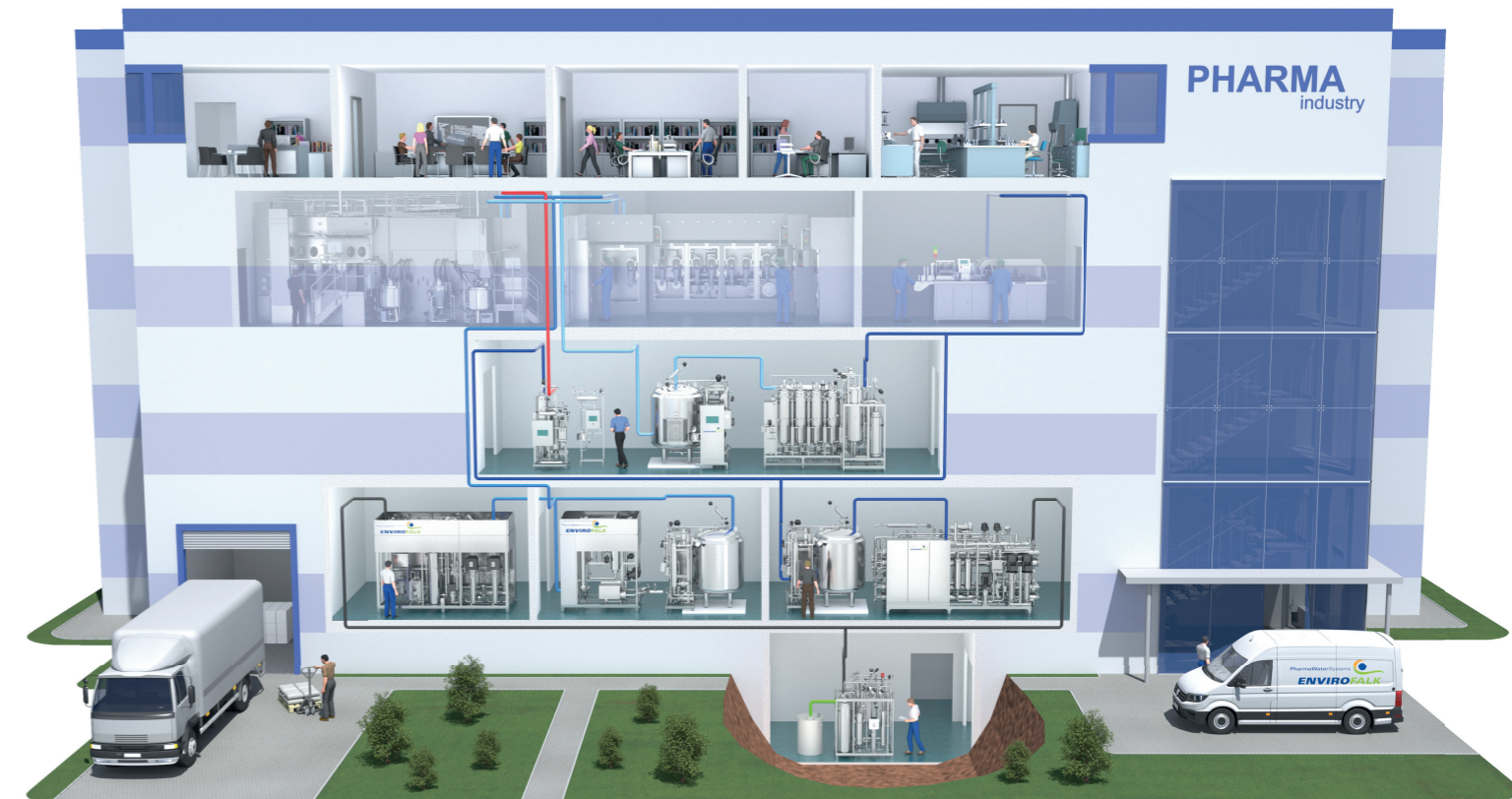
## ULTRA PURE WATER

- modular Process plants
- High Purity Design
- ultra-low ion concentration
- particle-free, low-TOC



## ENERGY - POWER TO X

- Ultrapure water for PtG process
- redundant plant technology
- modular Process plants
- high product safety



# Our Service Concept

In addition to consulting, project planning and operational implementation, our performance promise also includes reliable maintenance of the systems as well as comprehensive services tailored to our customers individual needs.

The customer is our focus - competent service for the customer is a matter close to the heart of the team at EnviroFALK PharmaWaterSystems.



REMOTE SERVICE



HELP DESK



MAINTENANCE



TRAINING & EDUCATION

Depending on your requirements we offer very flexible, comprehensive and modular service contracts. In order to support your life cycle management around the water treatment plant in the best possible way, we offer you the greatest possible support and advice in the area of service & maintenance.

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