

## Technical Data

### Measurement Technique and Sample Preparation

Type of Measurement : toxicity measurement by determination of oxygen turnover using nitrifying bacteria  
Measurement Range : 0-5 mg/l min oxygen turnover  
Measurement Value : 0 - 100 % toxicity  
Response Time : 3 minutes  
Sample Preparation : maintenance-free particle separator

### Operation and Data Output

Graphic-LCD-screen, high resolution, back-lit  
Autostart-Function  
Self-explanatory Software including maintenance checklist and support  
Industry-standard data interface  
Data storage on 3.5" disk

### Connections

Waste water, Drain : tube 30 mm ID or threaded  
32 mm OD or as specified  
Electrical Power : 230 / 115 V~, 50 / 60 Hz, 100 VA  
Analog Output : 0/4 - 20 mA  
Serial interface for data transfer and remote control  
Malfunction Alarm, Life-Zero  
Connection for printer

### Dimensions and Weight

Cabinet : stainless steel IP 65 (NEMA 12-13)  
Dimensions : 600 x 720 x 420 mm (W x H x D)  
(23.6 x 28.4 x 16.5 inches WxHxD)  
Weight : 60 kg (130 lbs)

The information and the illustrations in this brochure on appearance, service, measure, weight, consumption, maintenance times and so forth, are not binding and only an approximate description. It does not assure guaranteed qualities. This product description corresponds to the state of printing. Deviations in design, tint, as well as changes of the scope of delivery remain reserved.

If you require more information about our products (e.g. online TOC, TN<sub>b</sub>, COD, BOD or toxicity measurement), please call us.

... there's so much more !



**LAR**  
PROCESS ANALYSERS AG

Adalbertstraße 37 - 38  
D-10179 Berlin  
Telefon : +49 (0) 30 278 958-23  
Telefax : +49 (0) 30 278 958-66  
e-mail: export@lar.com  
http://www.lar.com



**LAR**  
PROCESS ANALYSERS AG

**USE**  
Soluções em Medição e Controle

**Security and  
cost effectiveness by  
protection of the nitrification!**

## NitritoxMonitor<sup>®</sup>

On-line Toxicity Analyser  
Using Nitrifying Bacteria

- greater sensitivity than conventional methods
- for waste water treatment, process control and laboratory
- protects the biology of WWTP's from toxic substances

**On-line Toxicity analyser using nitrifying bacteria (NitritoxMonitor)**

- ▶ .. as a "pre-warning-system" for the protection of biological waste water treatment plants (WWTP)

**NitritoxMonitor** monitors the effect of toxic substances on nitrifying bacteria and provides the operator with the opportunity to protect the biology of the waste water treatment plant (e.g. by diverting the sewage water into a storage tank).

Without **NitritoxMonitor**, the operator faces the risk that the inhibition of the nitrification process due to toxic substances, will be identified too late. The operator only notices that the BOD degradation rates stay as high as usual but the ammonia removal is inhibited for several days. The increased discharge of ammonia, caused by damage to the nitrification process leads to water pollution and often to higher charges for the owner of the WWTP.

Every sample (e.g. from the influent of a WWTP) can be checked within a few minutes to verify if it contains toxic substances that may damage the nitrifying bacteria of the plant. This is possible by a culture of nitrifying bacteria from the WWTP being cultivated in the analyser. For every test a small portion of this self-regenerating culture is used.

The test can be accomplished automatically every five minutes - fast enough to prevent damage of the nitrifying process by toxic substances.

- ▶ ..as a "biotest-system" in the laboratory

Another typical application is the test of individual samples to establish whether they inhibit the nitrification process or not.

Within 3 minutes **NitritoxMonitor** gives the operator an answer to the question, "Is the test water toxic to the nitrifying bacteria?". If it is, then it can be diverted from the waste water treatment plant.

Because **NitritoxMonitor** works with the nitrifying bacteria of the WWTP that represent part of the plants biomass, the result of the toxicity test from the analyzer is representative of the effect of different substances on the plant's nitrifying bacteria.

Therefore searching for individual toxic substances is no longer necessary!

- ▶ **NitritoxMonitor reduces expensive laboratory time and protects WWTP operators from additional costs caused by higher discharges of ammonia due to loss of the nitrification process !**



**The measuring principle**

The measured variable in the toxicity test is the respiration inhibition of the nitrifying bacteria. The measurement begins by filling the measuring cell with the test water. Next the nitrifying bacteria are dosed into the measuring cell and the oxygen consumption of the test organisms is measured then.

A low oxygen turnover of the nitrifying bacteria (respiration inhibition) indicates the presence of toxic substances, which have a detrimental impact on the nitrification process of the waste water treatment plant (WWTP).

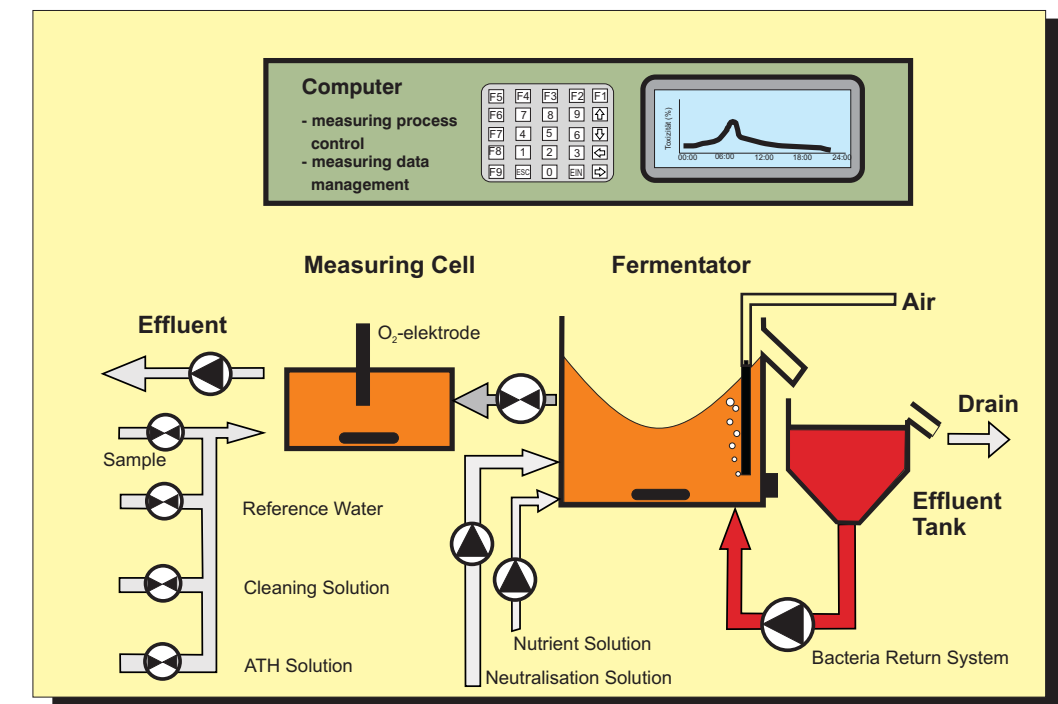


Fig. 1: The measuring principle of NitritoxMonitor

**Advantages of this measuring principle**

- ▶ **rapid toxicity testing**  
by a short response of less than 3 minutes
- ▶ **very sensitive measurement**  
by exact control of the nitrifying bacteria (test organisms)
- ▶ **representative measurement for the biology of the WWTP**  
by using the plant's own nitrifying bacteria
- ▶ **continuously ready to measure**  
since poisoning of the test organisms is impossible

## • Toxicity determination

Fig. 2 shows the measured data screen of **NitritoxMonitor** with a 24h-profile of the influent of a municipal treatment plant. The upper part of the screen shows a toxicity "spike" caused by industrial sewage. Over the period of the "spike", the nitrifying bacteria will consume a reduced amount of oxygen due to them being inhibited by the toxic substances in the test sample.

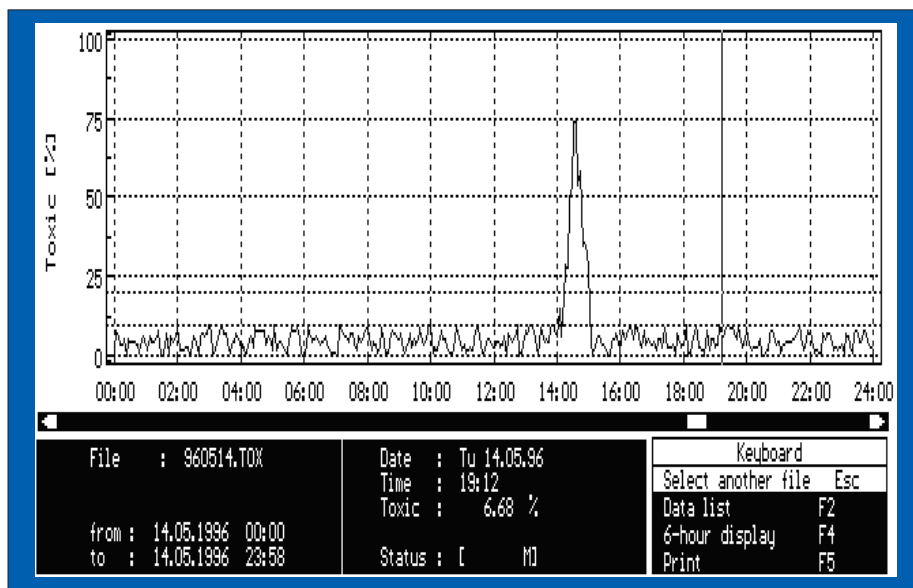


Fig.2: NitritoxMonitor detects toxicity "spikes" at the influent of a WWTP

By using the alarm function of **NitritoxMonitor** the WWTP has the opportunity to divert the toxic sewage water from the treatment process. With **NitritoxMonitor** it is possible to protect the nitrification process of a biological waste water treatment plant from specific damage.

## • NitritoxMonitor makes on-line toxicity measurement simple

Self-explanatory software supports every available function, from adjusting the analyzer to further processing of the measured values. Result data can be read from the high resolution display or can be transferred via Disk to PC/office network for further processing.

The operation manual is integrated into the software. Thereby, the user may review even infrequently required information directly at the instrument, any-time. The internal data bank stores the measured values of the last 30 days in memory and 90 days on disk - even after a power loss.

All these features result in an easy to operate analyser with low maintenance .

- **Reliable technique**

**NitritoxMonitor** is based on the concept proven in the Monitor series by LAR, which is shown in their ease of operation and maintenance.



Fig. 3: Inside the NitritoxMonitor

Unhygienic maintenance works for example caused by blockages do not occur due to the use of large bore tubing and the patented sampling system "FlowSampler" which works on the principle of mass inertia. This simple principle effectively removes any large particles.

- **Advantages of this construction principle**

- ▶ **clog free sample preparation**

- ▶ **simple accessibility**

- ▶ **low maintenance**

by simple design and robust construction

- ▶ **high reliability**

by autostart function even after a power failure

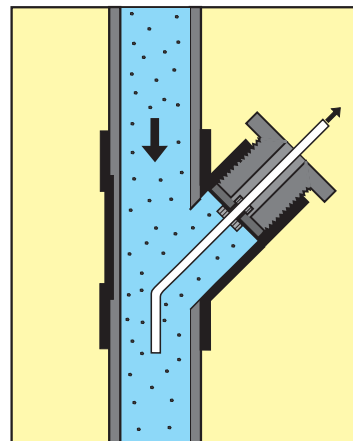


Fig. 4: The patented, clog free sample preparation system "FlowSampler"