

Technical Data

Measurement and Sample Preparation

Type of measurement : continuous measurement of BOD and sludge activity using activated sludge
Measurement Range : user - adjustable between 1 - 50 and 1 - 200.000 mg/l BOD
Actual value : every 3 - 4 minutes
Sample preparation : maintenance-free particle separator

Operation and Data Output

Graphic-LCD-screen, high resolution, back-lit
Autostart-Function
Self-explaining software including maintenance checklists and support
Industry-standard data interface
Data storage on flash card

Connections

Waste water, Drain : tube 30 mm ID or threaded 32 mm OD or as specified
Electrical Power : 230 / 115 V~, 50 / 60 Hz, 150 VA
Analog Output : 0/4 - 20 mA (BOD)
Analog Output : 0/4 - 20 mA (sludge activity)
Serial interface for data transfer and remote control
Malfunction Alarm, Life-Zero
Connection for printer

Dimensions and Weight

Cabinet : stainless steel IP 54
Dimensions : 600 x 720 x 420 mm (W x H x D)
(23.6 x 28.4 x 16.5 inches WxHxD)
Weight : 70 kg

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 for online TOC, TN_b, TP, COD, BOD or toxicity measurement, please call us.

There's so much more !



Neukoellnische Allee 134
D-12057 Berlin
Telephone : +49 (0) 30 278 958-23
Telefax : +49 (0) 30 278 958-703
E-mail: export@lar.com
http://www.lar.com



Simultaneous measurement of
BOD and sludge activity
in 4 minutes !

BioMonitor[®] Series

Continuous Short-Time-
BOD-Measuring Systems

- measure the BOD and sludge activity with one instrument
- for waste water treatment and process control
- fast, precise, no filter

• **For controlling industrial and municipal waste water treatment plants (WWTP)**

The **BioMonitor** is suitable for many different applications:

- ... for fast and reliable load ratio documentation of the influent and effluent of any plant with the aid of either the BOD concentration or the BOD load,
- ... for controlling the denitrification at the effluent of any plant by exact dosing of the waste water as carbon source,

• **Correct and precise BOD-measurement with the activated sludge of the plant**

The patented measuring method of the **BioMonitor** works just like a miniature treatment plant. The activated sludge, either supplied direct from the plant or circulating with the sludge recycling system, degrades the substances present in the waste water. The oxygen required for this process is measured. This process takes place in the waste water cascade of the **BioMonitor** which works exactly like an aeration

... for adjustment of a constant sludge load by calculating the amount of return sludge with help of the known concentration of biological degradable substances, present at the influent,
 ... for water monitoring at water quality monitoring stations.
 The following is an explanation of the reasons for the versatility of this instrument:

tank. Since the microorganisms which are contained in the activated sludge do also breathe oxygen, the self-respiration has to be subtracted from the total oxygen consumption for the exact BOD determination. This self respiration is measured in the reference cascade of the **BioMonitor**. Finally, the BOD is calculated from the difference between the values measured in both cascades.

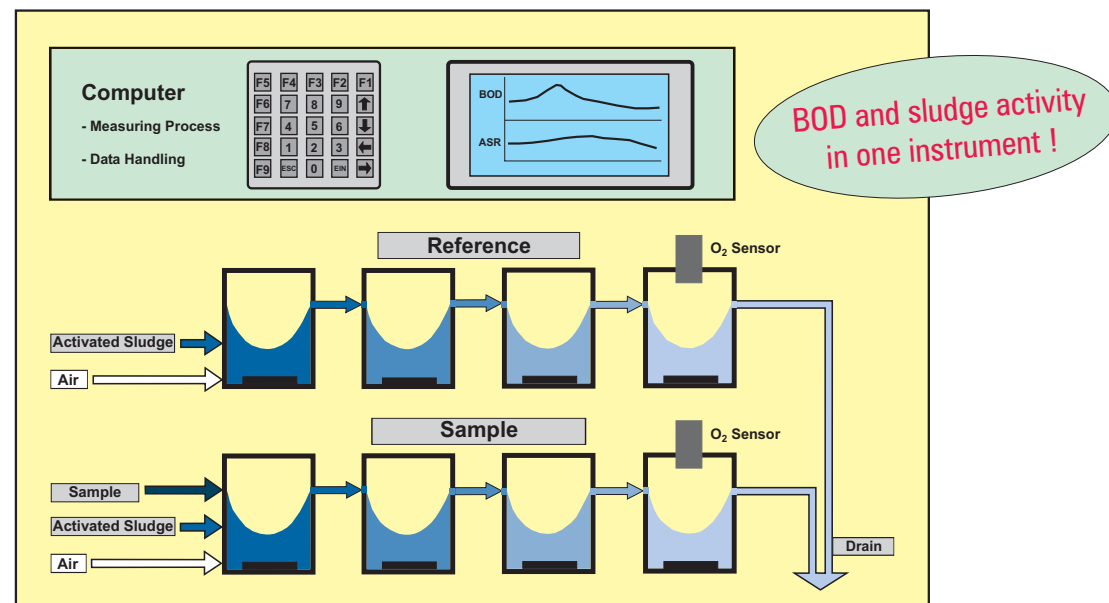


fig.1:
Operation principle of the BioMonitor

• **Complete degradation of the substrate in the fastest time possible**

Compared with Systems with just one reaction vessel the degradation happens not only faster but through the multi-step construction also hard degradable substances get determined in the rear waste water cascade. The result for the user of this unique

measuring principle is the precise and fully continuous determination of the BOD in three to four minutes. The sample gets degraded without any extra dilution exactly like in the particular treatment plant.

• **Simultaneous measurement of the Activated Sludge Respiration (ASR)**

The measurement of the self-respiration of the activated sludge (ASR) serves not only the exact calculation of the BOD, but also the ASR provides important information on the condition of the plant's own biomass which is

Especially of importance for controlling and supervision. If the ASR for example is falling slowly it could be the sign of a slowly but surely poisoning of the activated sludge by toxic substances.

• **Comfortable operation**

BioMonitor is equipped with a good readable display which depicts clear graphical surveys of measured values. In addition to graphics, the actual measuring values can also be displayed in big digits.

The complete operation manual is integrated into the self-explanatory software. Thereby the user may look up even infrequently required information directly at the instrument, anytime. The **BioMonitor** resumes normal operation after a power loss and stores all previous data in memory. This ensures optimum operation.

All graphics and results may be printed out through the printer interface. An uncomplicated data-transfer to disk or directly through serial or parallel interfaces to a measuring station is a matter of course, just as the preparation for teleprocessing and remote control.

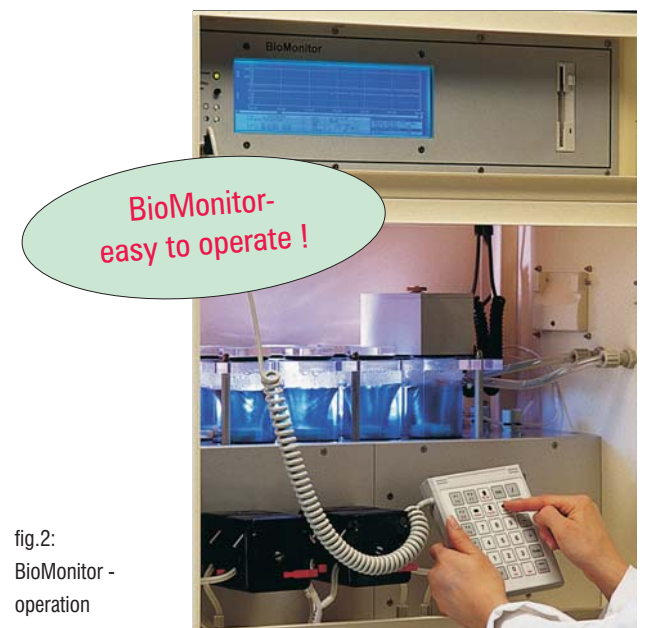


fig.2:
BioMonitor - operation

• **High correlation with BOD₅**

The **BioMonitor** detects even rapid BOD changes and shows accurate measuring results.

Accompanying illustration shows the BOD value after 5 days in comparison to the values measured with the **BioMonitor** at the influent of a beverage company.

Noteworthy is the outstanding and most consistent correlation ($r > 0,95$) to the standard methods (DIN 38409-H51, APHA-AWWA-WPCF 5210 B, EPA - approval, etc.).

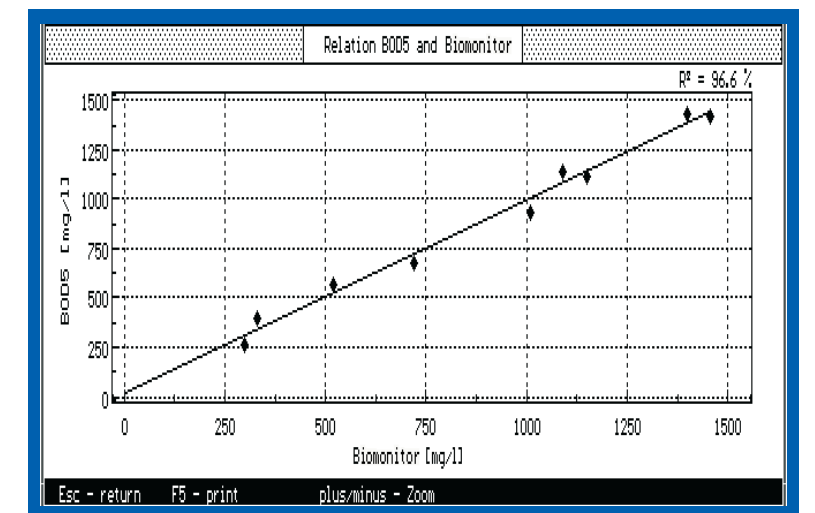


fig.3: High correlation between BioMonitor und BOD₅

• **Maintenance-free filterless sample preparation**

The patented sample preparation system Flow-Sampler works filtration-free as the sample is taken in the center of the sample stream against the direction of the main stream.

Thereby, all large particles get reliably removed. Smaller solid matter particles get sampled too so that a representative sample reaches the analyser.

FlowSampler masters even the most difficult tasks, for example; sampling at sewage work influents before the coarse screen.

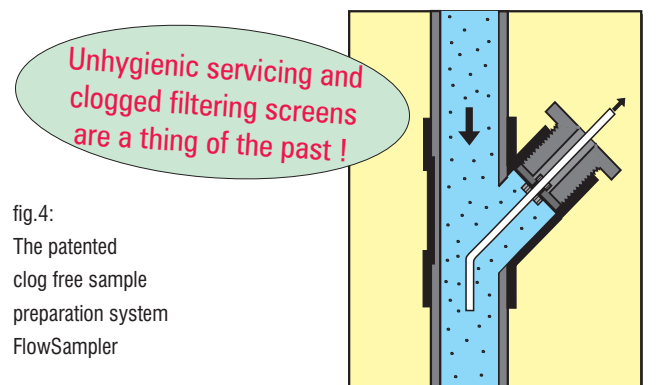


fig.4:
The patented clog free sample preparation system FlowSampler

• Self-contained BOD-measurement with activated sludge

The unique measurement system of the **BioMonitor** with the original activated sludge performs optimally when a permanent activated sludge supply (for example from the aeration tank) is provided.

Whenever, there is no continuous activated sludge supply available, the **BioMonitor** with sludge-recycling is the right choice.

After the first supply, the activated sludge is circulated through the **BioMonitor** with aid of the sludge-recycling unit (see Figure 6).

The sludge-recycling works exactly like the sedimentation tank of the treatment plant. Thereby the measuring system becomes independent from a permanent activated sludge supply.

In combination with the sludge-recycling unit the **BioMonitor** works independently just like small treatment plants everywhere!



Fig. 5: Sludge-Recycling Unit

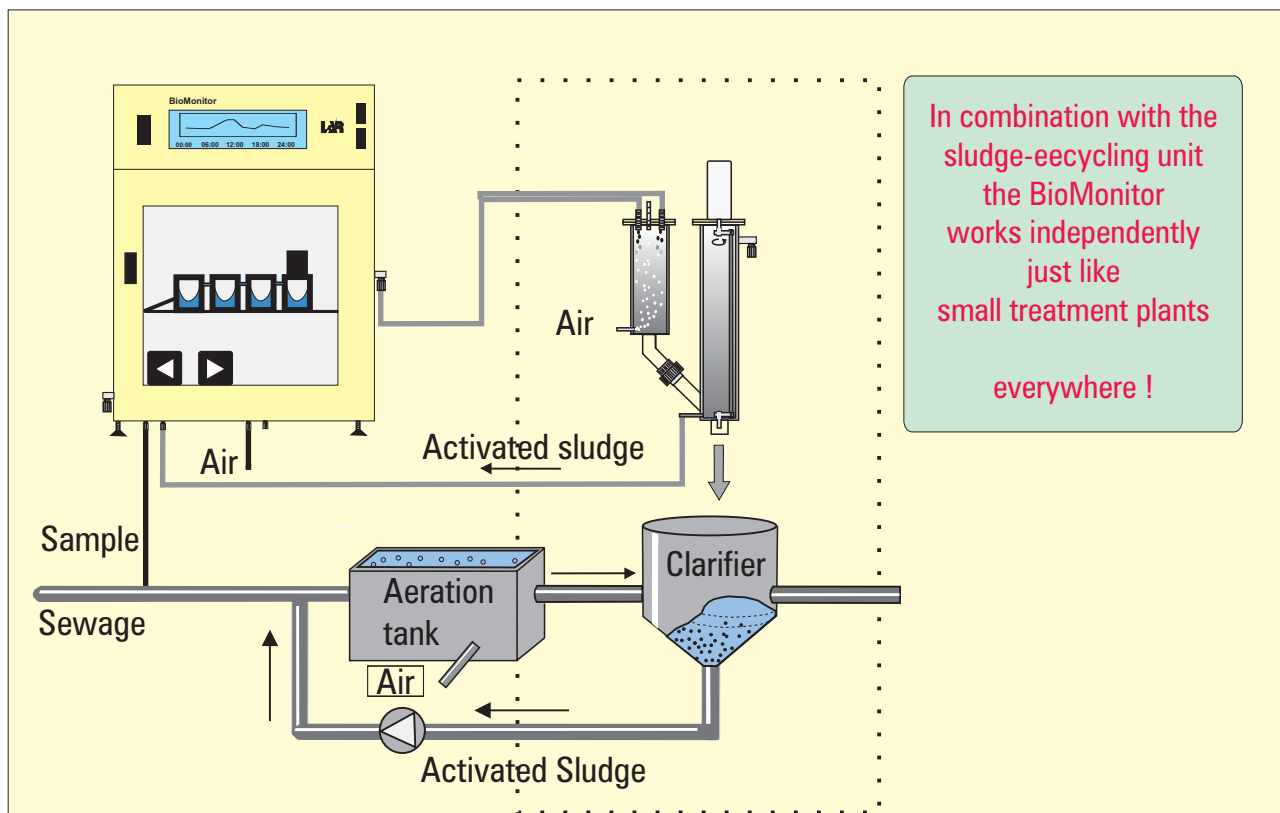


Fig. 6: BioMonitor and Sludge-Recycling Unit

- **A unique measuring principle, requiring minimum maintenance**

The measurement of BOD with the aid of original activated sludge has been achieved in an instrument design which meets the highest requirements of the continuous operation in waste water treatment plants.

The instrument's design which has been patented by and awarded to LAR, embodies a high standard of operational safety and requires very little maintenance.

This is testified by the measurement of oxygen with air-oxygen sensors that do not suffer from conventional fouling problems.

The self-cleaning reactor cascades and the maintenance-free sample preparation "FlowSampler" minimise the need of maintenance of the **BioMonitor** and safeguard a problem-free continuous operation with lowest operation costs, for many years.

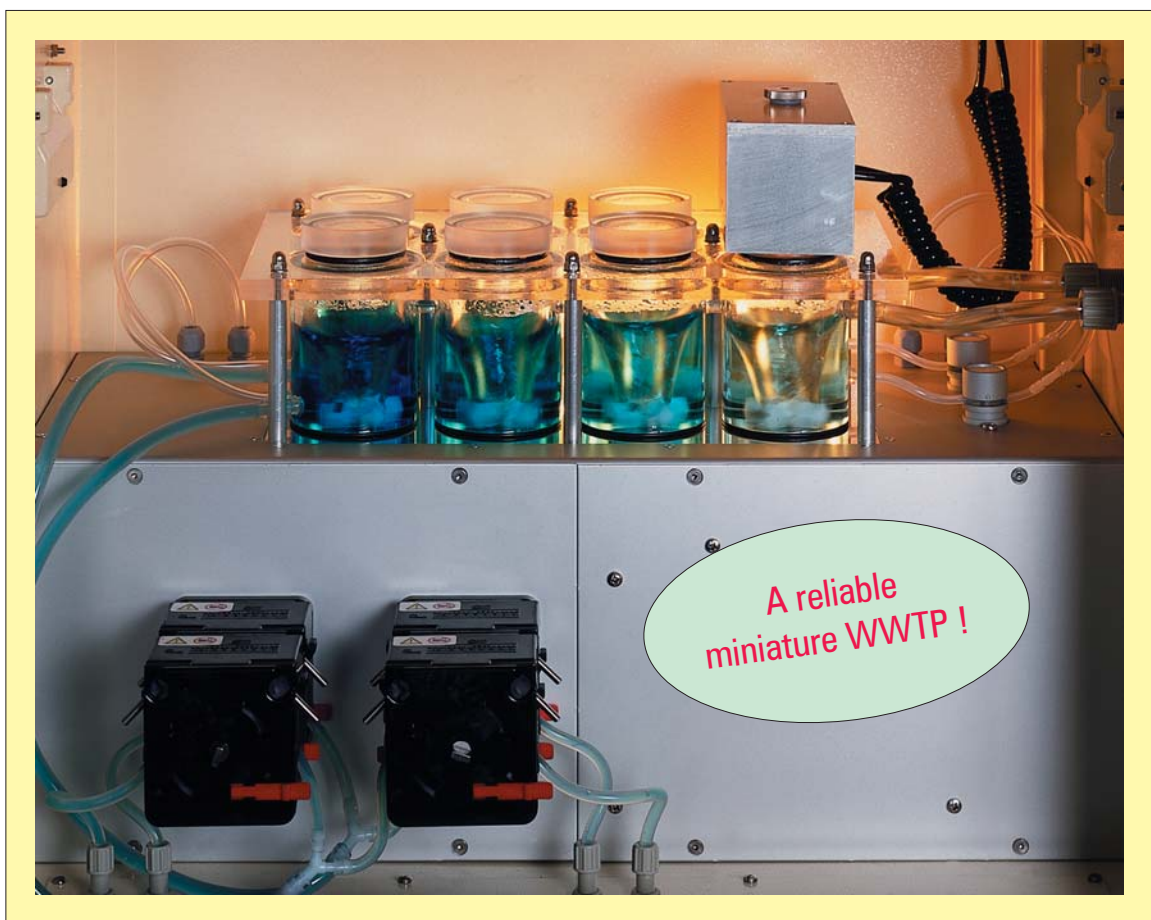


Fig. 7:
Inside
the
BioMonitor

- **Your advantages:**

- Correct and precise measurement of BOD in 4 minutes
- Simultaneous measurement of the activated sludge respiration (ASR)
- BOD measurement under the degradation conditions of your plant
- High operational safety