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The bbe Fish Toximeter

A powerful instrument for water toxicity monitoring

The advanced bbe Fish Toximeter observes fish under the influence of a "sample" water stream. Zebrafish (Danio rerio) are commonly used, but other test species are also appropriate. bbe has developed a sensitive instrument for the detection of toxic compounds in water bodies such as rivers, water treatment plant intakes and sewers. This instrument is based on a development of the Extended Dynamic Daphnia Test (EDDT), a proven method used widely in Europe and other parts of the world.

Continuous biological monitoring with the bbe Fish Toximeter enables rapid detection of toxic substances in water and provides an online real-time early warning system. The relative magnitude and duration of the presence of toxic substances is recorded by the instrument to enable further analysis. This unique instrument enables supervision and control to detect, record and respond rapidly to incidents of toxic contamina tion. The Fish Toximeter is well-suited to the detection of wilful or negligent damage to water systems such as the drinking water supply. The bbe Fish Toximeter is capable of long-term monitoring during the “strategic” evaluation of water quality.

The bbe Fish Toximeter, an instrument with a wide detection range

Technology for water quality monitoring

The toximeter’s continuous visual analysis of fish movement enables rapid assessment of the fish’s behaviour and health.Toxicity computations and assessments are based on the measurement of the following surrogate behavioural parameters:

- speed observation
- altitude
- turns
- growth observation
- number of active fish

Observe your water quality by rapid online evaluation

Live video camera images are recorded by a digital camera and analysed online by an integrated PC accessible via the touchscreen PC built into the front panel.

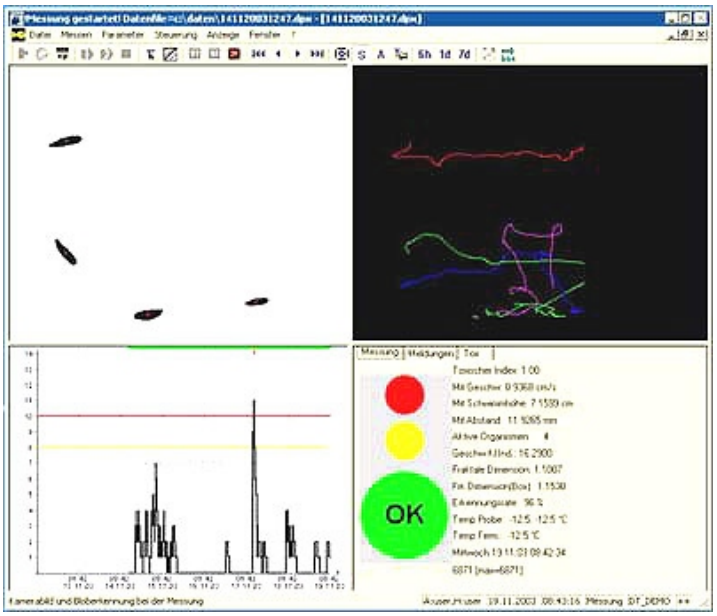
The behaviour of the fish is examined and analysed for sudden changes and a combined parameter, the so-called "toxic index", is calculated continuously allowing statements regarding the status of and changes in water quality status changes superior to other methods.

An instrument for water toxicity monitoring

High sensitivity – low maintenance costs

The bbe Software

The integrated bbe software recognises significant changes in the behavioural data obtained from the live observation and recording of the fishs' movements. Toxic events are clearly indicated as "alarms". A statistical approach enables alarm recognition even under difficult real-world conditions such as "noisy" or slow drift of the measured behavioural curve(s). The sensitivity of the alarm can be pre-defined or easily adjusted by the user based on the specific application. The bbe software is an approved system and already used with other online toxicity assessment systems.



Screenshot of the bbe Fish Toximeter software

Simple to Operate

The bbe software contains all the components necessary to operate the toximeter. The 17" touchscreen panel provides a graphic display of the measured results with live, real-time images, offline viewing and an intuitive user interface. Fish tank, tubes and connectors are easily accessible for low-maintenance.

aquarium and camera

Technical data

Housing	carbon-fibre housing with glass aquarium, LED illumination
Aquarium	27 l
Weight	50 kg
Size (H x W x D)	1000 x 780 x 660 mm
Power supply	110/230V @ 50/60 Hz
Power input	400 W
Recommended temperature	5-35° C
Flow rate	50-150 l/h
Housing protection	IP54
Outputs	2 x 24V/1A contacts
Interfaces	LAN, USB, Fire Wire
Maintenance interval	> 14 days
Recommended fish species	tiger barb or other (local) fish - depending on water temperature at site
Number of fish	6-8
Size of fish	4-6 cm
PC	17" touch panel PC, Windows xp Pro
Optional features	dechlorination system, remote operation, audio/visual alarm indication
Optional interfaces	RS232, MODBUS, 2 x 4-20 mA