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The *bbe* Fish Toximeter

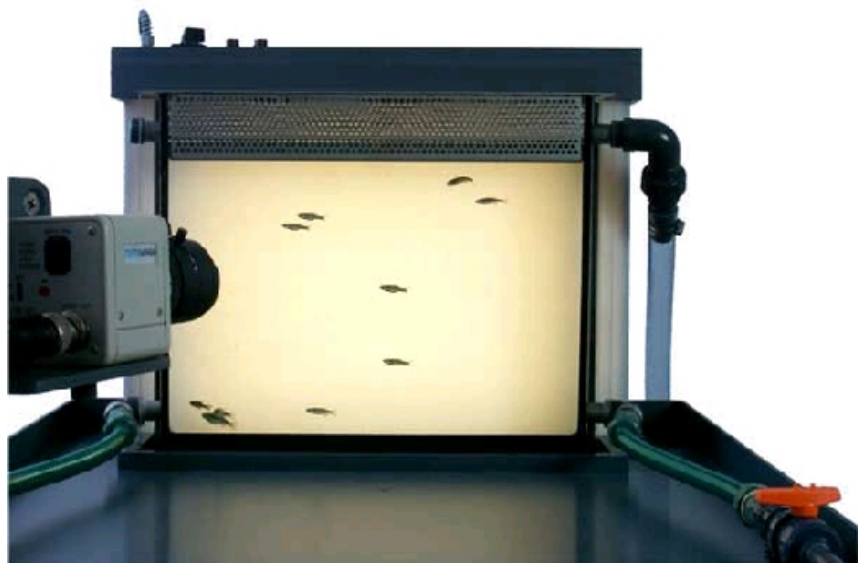
A powerful instrument for water toxicity monitoring

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 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 contamination. 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.

Technology for water quality monitoring

The toximeter's continuous visual analysis of fish movement enables rapid



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

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
- circling movements
- growth observation
- number of living fish

Observe your water quality by rapid online evaluation

Live video camera images are recorded and the signals analysed online by an integrated PC.

Any change in the behaviour of the fish is examined and analysed and a combined parameter, the "toxicity index", is calculated continuously.

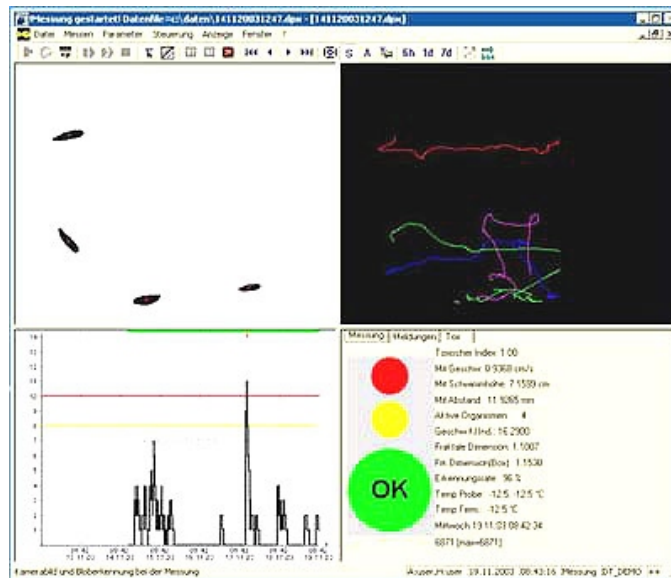


An instrument for water toxicity monitoring

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 fishes' 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 PC runs on Windows 2000/XP. The bbe software contains all the components necessary to operate the toximeter. It provides a graphic control panel of the measured results with live, real-time images, offline viewing and an intuitive user interface. Fish tank, tubes and connectors are easily accessible at a low-maintenance level.

Options

- connection to a local area network with permanent access to data
- remote maintenance of the computer system
- remote or local automatic audio/visual alarm indicators via fax or pager
- Integration of other sensors to measure oxygen, pH, conductivity, etc.
- standard size of the fish basin is 60 x 50 x 10 cm.

Other sizes are available on request.

Your local bbe dealer...



Zebrafish (Danio rerio)