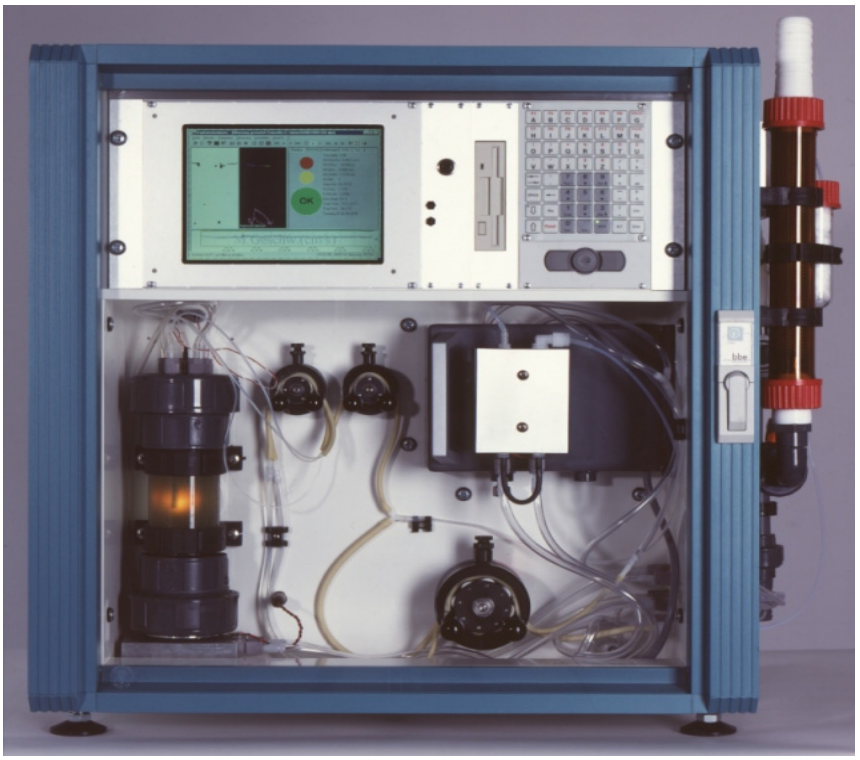
bbe
moldaenke

Wildrosenweg 3 · D-24119 Kiel-Kronshagen
Fon (+49) 431 38040-0
E-mail info@bbe-moldaenke.de
www.bbe-moldaenke.de

Continuous visual analysis of fish and Daphnia behaviour

The combined bbe Fish and Daphnia Toximeter

The advanced bbe Fish and Daphnia Toximeter observes young living zebra fish and Daphnia under the influence of a "sample" water stream. 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 the bbe Daphnia Toximeter, a tried and tested instrument used in many countries. Continuous biological monitoring using the combined bbe Fish and Daphnia Toximeter enables rapid detection of toxic substances in water and provides an online, real-time, early warning system. This unique instrument allows water managers to rapidly detect, record and respond to incidents of toxic contamination. The combined Fish and Daphnia Toximeter is well-suited to the detection of wilful or negligent damage to water systems. The instrument can also be used for the long-term monitoring in the "strategic" evaluation of water quality.



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

Technology for water quality monitoring

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

- speed observation
- altitude
- turns
- circling movements
- growth observation
- number of living daphnia and fish

The incorporation of two simultaneous online test systems does not only improve the quality of analysis statistically, but also the different sensitivities for harmful compounds.

Observe your water quality by rapid online evaluation

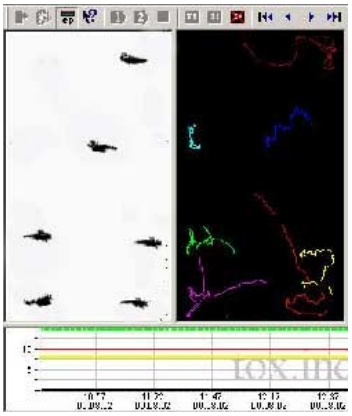
Live video camera images are recorded and the signals are analysed online by an integrated PC. Any changes in the behaviour of the fish or Daphnia are examined and analysed and a parameter called the "toxicity index" is calculated continuously.

A two-in-one instrument for water toxicity assessment

High sensitivity – low maintenance costs

The bbe Software

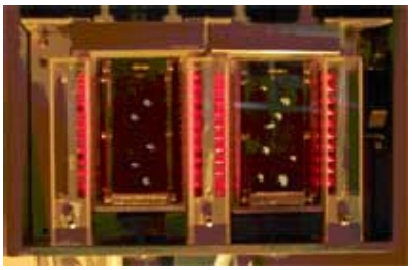
The bbe integrated software recognises significant changes in the behavioural data obtained from the live observation and recording of the fish's and Daphnia's movements. Toxic events are clearly indicated as "alarms". A statistical approach enables alarm recognition even under difficult real-world conditions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



Screen of the bbe Fish Toximeter;
left: digitized live picture,
right: tracks of the fish

Simple to Operate

The integrated PC, running Windows 2000 or Xp, comes with a keyboard, an integrated mouse and a graphic display monitor. The bbe software contains all the visual components of the bbe Toximeter. It provides a graphic presentation of the measured results with live, real-time pictures, offline viewing and an intuitive user interface.



Two-chamber system for
simultaneous observation

Options

The use of standard components for control and analysis in the bbe Toximeter allows for a number of options which can be included if required: 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.

Zebra fish and Daphnia Magna

Brief Technical Data

Two-chamber system

Easy maintenance to change the test organisms and cleaning

Temperature-controlled chamber

Fish/Daphnia feeding via integrated continuously operating algae fermenter

Sample water filtration with integrated cross-flow filter

Compact housing protection class IP54, steel varnished

Separate compartment for flow-through and electrical components

Weight 60 kg / 133 lbs

Size 600 x 600 x 500 mm / 23 2/3" x 23 2/3" x 19 "

Voltage 110-120V 60Hz or 220-240V 50Hz

Power consumption 500 W

Measuring cycle 1-30 min

Analogue output 2 x 4-20 mA

Datalink 1 x RS 232

Network interface 10 / 100Mb Ethernet

Alarm (optional) 1 x dry contact

Data capacity 20 GB HD

Modem 56 k

Sample temperature 0 – 30 °C

Maintenance interval > 7 days