

10cells

An easy-to-operate field instrument for checking ballast water

Features

- most sensitive device on the market
- detection limit 1 living cell / ml
- measuring time less than 1 minute
- robust and easy handling
- 10" touch screen
- mobile use - powered with internal batteries

An instrument for the measurement of viable algae cells in a water sample

Ballast water is essential for the stability and maneuverability of ships cruising the seas. Marine plants and algae, animals and microbes cross the oceans in the ships' ballast water. Discharged at the end of the journey this biomass becomes released into different environment. Here they act as invaders which can seriously disrupt the indigenous ecology with all the negative consequences for the economy.

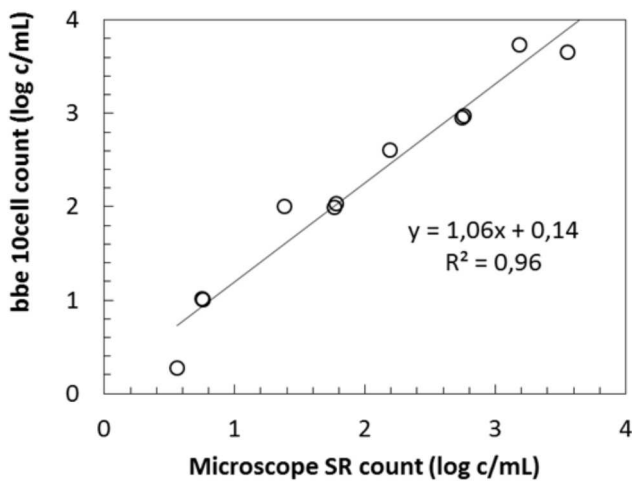
Regulations regarding the ballast water quality will be set in force by the International Maritime Organization (IMO) in the near future. Suitable measures such as ballast water treatment have to reduce the living organisms in the transported water.

The verification of the measures requests suitable and practical instrumentation. The challenge lies in the detection of a very low number of living organisms in a huge amount of volume.



The largest amount of biomass (> 80%) in ballast water consists of phytoplankton - especially microalgae. Therefore, algae are an ideal parameter for ballast water quality control. A test for algae will serve as an indirect measurement of a representative sample and finds its acceptance by the IMO as an indicative analysis of ballast water.

bbe Moldaenke is a leading manufacturer of algae measuring devices. With decades of experience in this field, bbe is proud to introduce the development of the ultrasensitive 10cells method. The bbe 10cells is a light-weight field instrument for the quantification of living cells in ballast water before and after any ballast water treatment.



Comparison of dilutions of *Thalassiosira weissflogii* cultures with microscope counts approves the relationship between microscopic counting and 10cells measurement



The measurement is based on the natural fluorescence of algal cells. This fluorescence reflects the functionality and the health of the algal cell. With the used method - a modified PAM*) excitation - it became possible to achieve the unexcelled resolution of 1 living cell per ml. Thus, the device is 10 times more sensitive than required by IMO regulations and 100 times more sensitive than available brand products.

After quick filtration of a 10 ml volume with a syringe the measurement of the algae on the filter needs less than one minute. No further sample preparation is needed. Simply turn it on, put the sample in and read the result. A traffic light directly indicates compliance or non-compliance. The realisation of the test is designed for harsh conditions on board or caused by weather.

The 10cells method is approved by comparison with different laboratory methods - for example as shown above.

*)PAM = pulse amplified modulation

An instrument for ...

- the measurement of viable algae cells
- compliance with IMO regulations
- measurements without chemical pre-treatment
- quick indicative analysis
- deployment on ships, in harbours, ...
- the mobile and easy use in the field or in the lab



Suitable measures such as ballast water treatment have to reduce the biomass in the transported water. The acceptable threshold is 10 cells/ml or less. The verification of the measures requests suitable and practical instrumentation. The challenge lies in the detection of a very low number of living organisms in a huge amount of volume. 10cells meets the requirements completely.



The bbe 10cells was approved during a trip through the North Atlantic Ocean on board of the research vessel "Meteor" in June 2015