

FastBallast

D-2 Compliance Monitoring Device (CMD)

Independently Certified - Rapid on-board testing of treated ballast water to ensure compliance with the IMO D-2 Regulations →



FastBallast is a portable Compliance Monitoring Device (CMD) with DNV verification of conformity to the requirements of the BWM/2/Circ.78 and ISO 3725:2023 standards. The instrument delivers rapid and accurate counting of living phytoplankton cells in the ≥ 10 and < 50 μm size class, to assess compliance to the IMO D-2 Discharge Standard.

FastBallast takes full advantage of Chelsea Technologies' ultra-sensitive implementation of Single Turnover Active Fluorometry (STAF) to provide a PASS / FAIL test result in under 8 minutes. The system is specifically designed to allow for on-board testing, with no requirement for sample filtration or the addition of reagents.

Key features

- PASS / FAIL result in under 8 minutes
- No filters or reagents required
- Over 10,000 on-board compliance tests completed
- Independently tested by NIVA, verified by DNV

Applications

- Port State Control compliance testing
- On-board ship compliance testing
- Verification of Ballast Water Management Systems
- Commission testing

How does FastBallast differ from other CMDs?

For compliance monitors utilising active fluorescence, a simple way of estimating the density of living phytoplankton cells within a sample is to assume a fixed level of variable fluorescence (Fv) per cell. A major problem with this approach is that the actual level of Fv per living cell can vary by more than 2 orders of magnitude. FastBallast is unique in incorporating a patented method for counting living phytoplankton cells. This involves statistical analysis of 480 STAF measurements of Fv. These are acquired at 1 Hz from a 1 mL interrogated volume within a stirred 20 mL sample. This approach is entirely dependent on the ultra-sensitive implementation of STAF incorporated within FastBallast. Importantly, it allows for an assessment of cell size, as well as cell density. Both metrics are reported with the PASS / FAIL result.

The analysis is based on Fv, which is generated by living phytoplankton cells but not dead cells. If the amplitude of Fv from the first two minutes of the test is too low to represent a minimum of ten spherical cells of 10 μm diameter, a Level 1 PASS result will be generated. If not, a Level 2 or Level 3 PASS / FAIL result is generated at the end of the 480 point test. The Level 2 and Level 3 data values are generated in parallel. Level 2 is selected if the analysis indicates a relatively narrow range of cell size within the sample. Level 3 is selected if a wider range of cell size is indicated. This feature of the analysis algorithm greatly improves the accuracy of test results with heterogeneous samples and removes the requirement for filtration and secondary measurement of such samples.

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Sensitivity	Better than 1 cell/mL for cells $\geq 10 \mu\text{m}$
Dynamic range	<1 to >1,000 cells/mL
Cell size class tested	≥ 10 and <50 μm
Test time	Two minutes for a clear (Level 1) PASS Eight minutes maximum
Sample volume	20 mL
Interrogated volume	1 mL
Service interval	2 years
Dimensions	273 x 246 x 122 mm
Weight	4.5 kg
IP Rating with lid closed	IP67
User Interface	Tablet with FastBallast software installed
Power	Internal rechargeable battery pack provides at least eight hours of operation
Connectivity to the supplied tablet	Bluetooth or USB

Customer Testimonial

“At GSA, we partnered with Chelsea Technologies for their industry-leading innovation and cutting-edge technology. FastBallast, their ballast water sampling device, demonstrated exceptional efficiency and reliability, perfectly aligning with our commitment to operational excellence. Since 2017, FastBallast has supported our operations by delivering accurate, near-instantaneous data without substantial issues. This partnership has allowed us to maintain our rigorous schedules, ensuring smooth and efficient operations while reinforcing our competitive edge in the market.”

Adnan Bahamdein (Chief Executive Officer at GSA)