



## SGS BALLAST WATER SAMPLING SYSTEM

Despite the general expectation that the IMO Ballast Water Management Convention will probably be ratified within the first half of the year 2015 the international community of ship owners seem still to be reluctant to equip their fleet with the necessary ballast water treatment system (BWTS).

Many of the BWTS already installed onboard ships, did not perform according to their specified normal operations in the past and methods for sampling and analysis of ballast water onboard ships to monitor these BWTS in operation were long since in-available.

SGS S.A. with its headquarters in Geneva, Switzerland, known for international inspection, certification and verification and with more than 80.000 employees and 1.650 laboratories in most of the major harbors around the world has succeeded in the development of a hydraulic, pressure driven system to adequately generate representative ballast water samples directly from within the ballast water pipes onboard

ships. In addition SGS developed an adequate chemical analysis procedure to indicatively assess the quality of the treated ballast water directly onboard within less than 40 minutes encompassing all target organism size classes defined by the IMO Ballast Water Management Convention.

On demand the SGS ballast water teams will come onboard the ships with the mobile sampling system and the mobile analytics. As soon as the sampling system is flanged to the onboard ballast water pipes, the samples are generated and immediately enter the analytical cycle of the chemical method also known as the "ATP-METHOD 1". The obtained results give an indication if the limit values for the ballast water quality as defined by the IMO are met.

In case this first level of ballast water compliance testing results in a positive statement, i.e. "COMPLIANCE", the master of the ship receives a certificate before the SGS ballast water team leaves the ship.

In case the testing results in a negative statement, i.e. "NON-COMPLIANCE" the SGS ballast water teams are ready – on demand – to step into the second level of ballast water compliance testing, the in-depth analysis. This in-depth analysis is not indicative but generates distinct values for numbers of organisms per volume unit for plankton and distinct values for numbers of colony forming units per 100 ml for bacteria (quantitatively and qualitatively). In contrast to the first level of testing this in-depth analysis requires a time span of one day from sample to result. To reduce the time span for the in-depth analysis down to 24 hours SGS developed the "FISH2" method for ballast water analysis. This method generates reliable, qualitative and quantitative results for bacterial analysis within 15 hours.

LEVEL OF TESTING	TARGET GROUP / METHOD
rapid, indicative	<ul style="list-style-type: none"> <li>• Plankton &gt;50µm/ATP</li> <li>• Plankton &gt;10µm&lt;50µm/ATP</li> <li>• Bacteria/ATP</li> </ul>
in-depth	<ul style="list-style-type: none"> <li>• Plankton &gt;50µm/microscopic counts</li> <li>• Plankton &gt;10µm&lt;50µm/ microscopic counts and "PAM- FLUOROMETRY"<sup>3</sup></li> <li>• Bacteria/FISH</li> </ul>



All technologies and methods applied by the SGS ballast water teams for on board compliance testing do not make use of dangerous or harmful substances thus these technologies and methods do not violate any international regulation for dangerous goods and harmful substances and their disposal.

As the sampling system is a pressure driven, closed system, it does not consume any electric energy and it does not generate any waste ballast water. The disposal of wastes generated during the analytical cycles is in the responsibility of the SGS ballast water teams.

The sampling system and the analytical procedures (ATP, FISH) are currently under consideration by the IMO to turn these methods into an international standard for ballast water compliance testing (official IMO document MEPC 66 INF./27, January 22nd, 2014).

<sup>1</sup> Adenosin-Tri-Phosphate, <sup>2</sup> Fluorescence-In-Situ-Hybridization, <sup>3</sup> Pulse-Amplitude-Modulation Fluorometry

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FOR DOWNLOAD OF ADDITIONAL DOCUMENTS PLEASE VISIT: [WWW.INSTITUT-FRESENIUS.DE/BALLAST-WATER](http://WWW.INSTITUT-FRESENIUS.DE/BALLAST-WATER)

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