



Empty bulkers carry huge amounts of ballast water

## BALLAST WATER TREATMENT: SYSTEM DECISION SUPPORT

### Ballast Water Management Convention

Ballast water is essential for the safe navigation of ships. It also provides a pathway for non-indigenous species, whose introduction into an ecosystem is potentially associated with severe economic and environmental damage.

This led to the adoption of the Ballast Water Management Convention by the I

International Maritime Organization (IMO) in 2004. According to the Convention, vessels of 400 GT and above will no longer be allowed to release untreated ballast water into the environment after a transition period.

### Ballast Water Treatment System

In order to eliminate microscopic organisms in the ballast water, a Ballast Water

Treatment System (BWTS) can be installed on board a vessel.

A BWTS processes the water prior to discharge, ensuring compliance with IMO ballast water standards. An increasing number of vendors, coming from a variety of industrial backgrounds, currently offer BWTS. Individual systems employ different technologies, have individual strengths and weaknesses and are suitable for various vessel types and sizes.

### Challenges associated with the selection of a BWTS

Ship owners have to identify the most suitable BWTS for their specific vessel(s). This choice is challenging due to the limited availability of operational experience with BWTS and the rapid development of the BWTS market. In the course of the selection process, various criteria related to the individual vessel, its area of operation, the characteristics of BWTS vendors and the BWTS itself have to be taken into consideration.

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## IMPRESSUM



Container vessels also need ballast water



The comb jelly e.g. invaded the Black Sea

### Basis of the Ballast Water Treatment System selection

Adequate attention should be given to the selection process. Investing in a Ballast Water Treatment System (BWTS) represents a significant financial commitment and is a decision that is not straightforward due to the lack of transparency in the market. The most suitable BWTS can be identified only if all the relevant criteria are taken into consideration. Crucial aspects that have to be considered include: a sound review of all BWTS and a clear methodology for reaching a decision.

### Services provided by Fraunhofer CML in the selection process

The Fraunhofer Center for Maritime Logistics and Services CML conducts technology and market analyses within the context of sustainable waterborne transport. These analyses include an assessment of the BWTS market. CML offers consulting services to support the complex BWTS selection process. Clients benefit from CML's unbiased position and comprehensive market insight.

#### Fraunhofer CML Market Analyzer: Identifying eligible BWTS

The first step in selecting a BWTS is to gain comprehensive market insight and identify suitable vendors. To this end, the Fraunhofer CML Market Analyzer identifies all BWTS available on the market and determines their technical capabilities and specifications. A BWTS must meet the individual requirements of a specific vessel or fleet. In order to do this, a number of characteristics about the vessel are noted. These include space and power availability, trade pattern, BW tank size and BW pump rate. Subsequently, eligible BWTS are identified by comparing the performance specifications of the system with the requirements profile of the vessel.

#### Fraunhofer CML Decision Supporter: Choosing the optimum BWTS

The Fraunhofer CML Decision Supporter offers a structured approach when choosing the optimum BWTS for a specific vessel. Central to a successful decision-making process is close cooperation between CML and its client when determining the decision



methodology and selecting the decision criteria. Aspects such as cost, availability of service and reliability of the system are taken into consideration and added according to the client's requests. Subsequently, CML carries out the BWTS evaluation and gives recommendations about what system to choose.

Additionally, once a decision has been made, CML offers further support, such as determining the correct timing for an investment or assisting with the fulfillment of certain IMO requirements, e.g. drafting a BW Management Plan.