

INTEGRATED BALLAST WATER TREATMENT



With environmental sustainability becoming ever more critical, the effective and safe treatment of ballast water is an increasingly important issue. Today, the loading and unloading of untreated ballast water accounts for several thousands of marine species being moved from one ecological area to another, sometimes with disastrous results for fragile ecosystems.

In an effort to address this situation, the International Maritime Organisation (IMO) adopted the Global Ballast Water Convention in 2004, mandating that ballast water must be treated prior to releasing it in another ecological zone.

THE WÄRTSILÄ SOLUTION – COMPACT AND EASY TO INSTALL

Wärtsilä's Ballast Water Treatment (BWT) solution effectively meets the IMO requirements. Its revolutionary design integrates both UV irradiation and filtration in a single treatment unit. The treatment

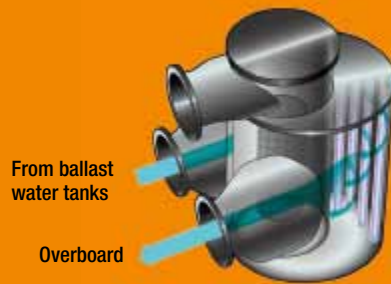
process within the system has two main steps, beginning with the filtering out of larger organisms or particles. The remaining organisms are then inactivated by ultraviolet (UV) irradiation.

The Wärtsilä BWT suite of products consists of individually validated units with different flow rates, ranging from 150 to 1500 cubic metres per hour. For higher flow rates, multiple units can be installed in parallel without compromising on operability or efficacy. The integrated design is common to the whole range, enabling small footprint and easy installation and maintenance.

Figure 1 – During ballast water intake, water passes through both the filter and UV disinfection.



Figure 2 – During deballasting, water bypasses filtration and passes through only UV disinfection.



Wärtsilä BWT500i main unit capable of treating 500 m³ per hour.

TECHNOLOGY

The technology used in Wärtsilä's BWT solution is robust filtering coupled with UV irradiation. The system is purpose-built and optimized for the treatment of ballast water, with all active components fitted within the same housing. This allows for an easy installation, and since both treatment process steps are handled in a single unit, it offers a high degree of predictability for pressure drop. No extra pipes are required to join the two treatment units, which means no additional pressure losses. Other important benefits include:

- Compact size, will fit most vessels
- Low power consumption
- A low total pressure drop over both the filter and UV components
- Easy maintenance and access
- High degree of system operability. Reduced filter loading rates, automatic backwash and unique filter and lamp cleaning technologies ensure uninterrupted ballasting operations.
- State-of-the-art UV and filtration technologies from a world-leading water solutions provider
- Enhanced sediment removal due to small pore sizes utilized for filtration (30 microns)
- Available in specifically designed and validated EX configurations for tanker installations.

MOST EFFECTIVE TREATMENT AVAILABLE

Wärtsilä's ballast water treatment systems use UV and filtration technology from Trojan Marinex, the marine water solutions division of Trojan Technologies. With over 6500 municipal facilities in more than 80 countries relying on their UV systems to safeguard the environment and health, Trojan is the world's largest and most experienced UV solutions provider.

Trojan's extensive Research and Development team has introduced many of today's global innovations in UV technology including the Solo Lamp™ which is incorporated in the Wärtsilä BWT range of systems. This powerful, high-efficiency UV lamp offers the high electrical efficiency of a low-pressure UV system, while simultaneously providing the low lamp count typical of a medium-pressure UV lamp system.

REGULATORY ISSUES

The IMO Global Ballast Convention was adopted in 2004. In order to come into force, it must be ratified by 30 countries representing 35 percent of the global fleet's dead weight tonnage. Once ratified, the convention requires that all vessels built prior to 2009 shall install a certified ballast water treatment system by no later than 2014 or 2016, depending on the vessel's ballast water capacity. Vessels built in or after 2009 have to install such a system immediately. Full ratification is expected to occur in 2012.

Simultaneously, the US regulatory framework for ballast water treatment is progressing fast. At the moment it seems the US regulation will come into force before the global IMO rules. In its initial form, the US regulations will replicate the IMO requirements, but a much harsher second phase is already being announced.

Wärtsilä BWT system data				
Unit	BWT150i	BWT250i	BWT500i	BWT1250i
Treatment capacity	150 m ³ /h	250 m ³ /h	500 m ³ /h	1250 m ³ /h
Filter pore size	30 µm			
Power consumption	8,5 kW	13 kW	26 kW	57 kW
Pressure drop over the system (clean)	0,1 bar			
Dimensions (H×W×D)	2.40×1.20×0.65	2.40×1.30×0.88 m	2.40×1.40×1.00 m	2.40×1.38×1.70 m

BWT1500i units with flow rate of 1500 m³/h available in Q4 2011.

BWT750i and 1000i units with flowrates of 750 and 1000 m³/h respectively will be available in 2012.

WÄRTSILÄ® is a registered trademark. Copyright © 2011 Wärtsilä Corporation. Specifications are subject to change without prior notice.

You may contact us at watersolutions@wartsila.com to know more about integrated ballast water treatment



WARTSILA.COM