

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	Wartsila Water Systems Limited
Address	Merchants House, Vanguard Road, Poole, BH15 1PH, United Kingdom
Place of Production	Cosco (Weihai) Shipbuilding Marine Tech. Ltd. No. 19 Shenyang South Road, Huancui District, Weihai, Shandong, China
Place of Production	Jiujiang Precision Measuring Technology Research Institute No. 83 Jiurui Avenue, Jiujiang City, Jiangxi Province, China
Type	Electro Chlorination Ballast Water Management System with Filtration
Description	Aquarius EC Ballast Water Management System models AQ-250-EC to AQ-4000-EC Safe Areas Installation AQ-250-ECX to AQ-4000-ECX Hazardous Areas Installation
Trade Name	Wartsila Aquarius EC BWMS
Application	For treatment of ships' ballast water
Specified Standard	Lloyd's Register Rules and Regulation for the Classification of Ships 2018 Part 5 and Part 6 as applicable,

Type Approval Certificate

LR Test Specification No.1, 2015: ENV2 category

Ratings

Please refer to attached Appendix Wärtsilä Aquarius EC BWMS AQ-250-EC, AQ-300-EC, AQ-375-EC, AQ-430-EC, AQ-500-EC, AQ-550-EC, AQ-750-EC, AQ-850-EC, AQ-1000-EC, AQ-1200-EC, AQ-1500-EC, AQ-1650-EC, AQ-2000-EC, AQ-2250-EC, AQ-2500-EC, AQ-3000-EC, AQ-3300-EC and AQ-4000-EC
Wärtsilä Aquarius EC BWMS models suitable for installation in hazardous area are designated with the suffix X (e.g. AQ-1000-ECX).

Other Conditions

The details of the intended installation and location of the Aquarius Electro Chlorination Ballast Water Management System, AQ-250-EC to AQ-4000-EC and AQ-250-ECX to AQ-4000-ECX is to be suitable and in compliance with the requirements of said location.

The integration of the BWMS and its connection to the ship's Ballast Systems, including connection to the piping, mechanical and electrical components and control engineering aspects, are to be shown on the ship's plans and submitted for approval.

Particular attention should be paid to the buffer tank Degas Tank ventilation system and monitoring. Manufacturer's instructions are to be rigorously followed and complied with.

The special conditions for safe use specified on the aforementioned IEC Ex and ATEX certificates are to be complied with.

All hazardous material handling procedures shall be followed in accordance with the material safety data sheet especially with respect to the neutralisation module.

The quoted specification for each discrete model is based on technical documentation submitted by the manufacturer. Any deviations require

Type Approval Certificate

submitting to Lloyd's Register for approval.

All components outside the scope of supply of Wartsila Water Systems Ltd. are to be of type complying with LR Rules and submitted for consideration prior to installation.

Multiple AQ treatment systems including each corresponding module may be installed in parallel to achieve TRC's other than that listed up to 13,200m³/hr.

If remote control screen, which is optional, is to be located on the navigating bridge then the illumination and lighting from the screen are to be adjustable down to zero. Refer LR ship rules Part 7, Chapter 9, Section 2.3.2.

Where it is proposed to install equipment in an area where an explosive gas atmosphere may be present, it is generally to be of a type providing protection against ignition of the gases encountered and certification details are to be submitted for consideration, except those listed within specification.

The use of plastic piping is to be considered in accordance with the Rules for Classification of Ships, Part 5 Chapter 12 Section 5 and of a type acceptable to LR.

Installation, survey and commissioning is to be conducted for each installation in accordance with Section 8 of 'Code for approval of BWMS', flag specific requirements, if any, and Lloyd's Register specific survey requirements.

This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

The Design Appraisal Document LR21282465TA and its supplementary Type Approval Terms and Conditions form part of this Certificate.