



SiCURE™ Ballast Water Management System

Preliminary testing of system efficacy was carried out at the Royal Netherlands Institute for Ocean Research, and the results showed that the SiCURE™ system can meet the most stringent regulatory requirements. In addition, while providing full compliance with IMO Convention D-2 regulations, the SiCURE™ system will provide ship owners with significant savings. The SiCURE™ system is dual-action – when not in use for providing ballast water treatment, the system can be efficiently used, where applicable, for biofouling control of the engine cooling water and auxiliary systems.

Benefits of the Chloropac® Biofouling Control System:

- Eliminates maintenance cost for cleaning seawater heat exchangers and piping
- Helps reduce fuel costs associated with fouled heat exchangers
- Helps reduce corrosion associated with biofouling
- No acid cleaning of electrolytic cells is required
- No storage of chemicals is required – the system produces a low concentration of hypochlorite from seawater in-situ
- Five (5) year prorated warranty on the Chloropac® CTE cells
- Automatic control of NaOCl residual

Benefits of the SiCURE™ Ballast Water Management System:

- Safe, reliable, secure solution to ballast water management
- Produces biocide in-situ and on-demand, minimizing corrosion and DBP potential
- Dual-action system provides ballast water treatment and biofouling control
- Low operating cost (estimated \$0.02 - 0.03 per ton of treated water)
- No on-board storage of chemicals required
- Low maintenance

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The information provided in this brochure contains merely general descriptions or characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of the contract.

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EPS-ELSiCURE-BR-0908
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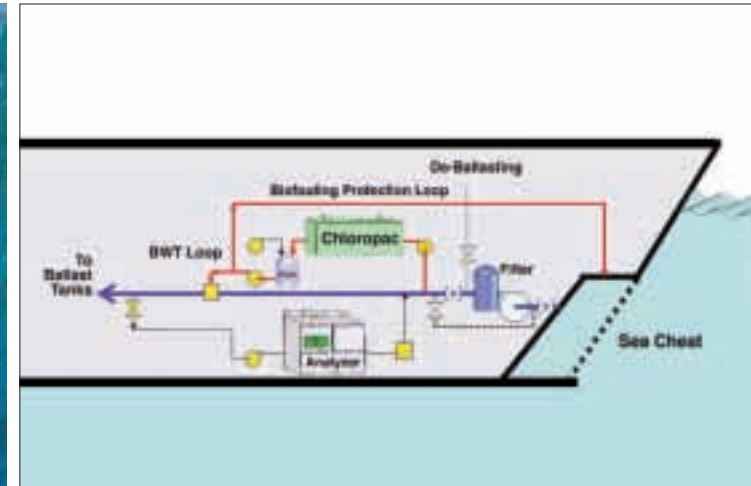
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SiCURE™ Ballast Water Management System

Water Technologies

SIEMENS

Introducing the Environmentally Secure Solution to Solve Ballast Water Problems



Siemens Water Technologies

Siemens Water Technologies is a leading provider of hypochlorination and electrochemical equipment designed to control biological fouling and corrosion wherever sea water is used as cooling or process water—e.g., land-based power and petrochemical facilities, water treatment facilities, ships and offshore facilities. Since 1950, our proprietary Electrochemical line of core technology has provided superior technical solutions and support services worldwide.

A division of Siemens' Industrial Solutions group, Siemens Water Technologies capitalizes on the world-class experience, technology, R&D support and manufacturing facilities of the group, which provides innovative solutions and services for improved life cycle costs in processing and manufacturing industries and infrastructure.

Maritime industry standard Chloropac® systems, with more than 2,500 installations around the world, provide the most effective, environmentally safe method of preventing biological fouling, using technically superior equipment for energy-efficient, long-term plant operation.

Our new SiCURE™ ballast water management system builds on our firm Chloropac® foundation with proprietary anode technology, engineering, design, manufacture and quality control to provide an ecologically sound solution to the marine industry.

Chloropac® System: Prevent Biological Fouling Safely and Cost-effectively

It is well understood that chlorination is the best solution for treating biologically fouled sea water. The Chloropac® system produces a dilute, safe solution of sodium hypochlorite for direct injection into the water circuit. Our advanced electrolyzer technology – available in a range of basic cell designs — coupled with our long-standing expertise in anode and system development, has freed thousands of customers worldwide from the cost and handling of large volumes of hypochlorite.

Invented and refined by our engineers, the tubular cell design within the Chloropac® system is a proven design that reliably produces sodium hypochlorite from seawater. Seawater flows through the annulus created by the concentric titanium tubes that make up the anode and cathode assembly. Passing an electric current through the seawater generates sodium hypochlorite, the active ingredient required for anti-fouling.

Chloropac® System Advantages:

- Unique, compact, modular construction for adaptable installations in both new builds and retrofits
- Low maintenance—a design that looks after itself
- No acid cleaning required at any time
- Patented electrode monitoring
- Modular construction provides just the electrolyzer capacity required
- Pre-designed standard systems available

SiCURE™ Ballast Water Management System

Confirming our commitment to the environmental protection of the world's water in general, and to the marine industry in particular, Siemens Water Technologies introduces a ballast water treatment system that will provide reliable and environmentally sound protection to local harbours from non-indigenous species.

The patent pending SiCURE™ system uses a combination of methods of physical separation and a proprietary, on-demand treatment with biocides produced in-situ from seawater without the addition of chemicals. The system is based on a proven 30+ year record and over 2,500 shipboard installations of Siemens' well-known Chloropac® biofouling control technology.

The SiCURE™ system is designed to provide efficient ballast water treatment even during the peak season of biological bloom, while adjusting itself when the bloom abates. SiCURE™ system proprietary control logic regulates the system's parameters to provide the required treatment efficacy while minimizing any impact on the environment and safety of the ship and its crew.