

# Backgrounder

### **Ballast Water Management System**



#### About us

Ecochlor® Inc. was founded in 2001 to provide simple, reliable, cost effective, easy to use ballast water management systems (BWMSs) for the maritime industry.

In 2004, the company installed its first system on Atlantic Container Line's Atlantic Compass. Two years later, a second system was installed on the Moku Pahu – a U.S. flag Jones Act bulk carrier. With ballast operations in California, this vessel encountered some of the strictest regulations in the world. For 13 years this ship ran ballast operations using the original installed system until her last voyage in January 2019.

As of January 2021, Ecochlor has approximately 325 ships in its order book with over 240 vessels currently running our System worldwide. Our customers include some of largest and most respected shipowners in the world — Anglo Eastern Ship Management, Alaska Tankers, Bahri Ship Management, Capital Ship Management, Doun Kisen Co., Ltd, Euronav Ship Management, Fuyo Kaiun Co., Idemitsu Tanker Co., JX Ocean Co., Liberty Marine, Maran Dry Management Inc and Maran Tankers, Minerva Marine, Maersk Shipping, SCF Group, Seacor, and Scorpio Tankers – to name a few.

Today, drawing on 20 years of experience in the maritime market, Ecochlor is working to bring new products to the market to promote safety and environmental technologies. Ecochlor's current products include:

- Ecochlor® BWMS (Filtration & CIO<sub>a</sub>)
- EcoOne™ BWMS (CIO₂ alone)
- EcoOne™ Hybrid BWMS (Dual mode filtration & CIO₂ or CIO₂ alone)

#### **Powerful Technology**

Ecochlor's BWMS product line relies on chlorine dioxide (CIO<sub>2</sub>), an efficient and effective biocide, for ballast water treatment.

Selecting one of Ecochlor's BWMSs offers a number of advantages over other treatment technologies:

- Extremely effective core CIO<sub>3</sub> technology
- No treatment prior to discharge and there is no need for neutralization
- No TRO sensors which can interrupt the ballasting / de-ballasting operations
- · Low energy use
- Treatment of flow rates up to 16,200 m<sup>3</sup>/hr.
- · Simple, flexible design with no-filter options available

This allows for an effective, easy-to-use system and provides shipowners the choice of the type of system they prefer.

#### Reliability

Ecochlor uses high-quality components and simplified system operation to minimize equipment failure and maximize the life of our system.

The ability of a BWMS to operate reliably over the lifetime of the vessel is not something that happens by accident. Ecochlor has designed and fully supports its products to ensure reliability for our customers.

The Ecochlor "Three Pillars of Reliability":

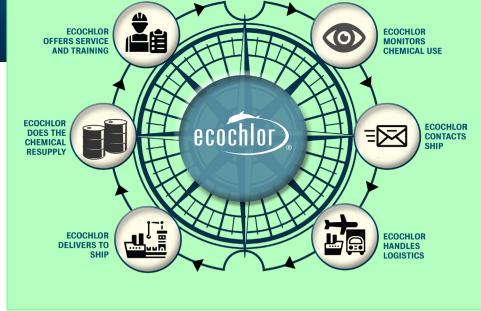
- · Powerful treatment technology along with a simple to use system
- · High-quality construction engineered 'fit for purpose'
- · Strong service support



Our mission is to end the wide-spread environmental damage to our coastal ecosystems. Our collaborations with innovative maritime business solutions providers are intended to deliver enhanced economic performance by providing environmentally sound products and services to the maritime industry.



Ecochlor technicians analyze data from every ballast operation to ensure system operability - currently 98% of Ecochlor's installed systems are operational



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#### **Chemical Resupply**

After close consultation with shipowners regarding current and future vessel operations we are building our chemical storage and resupply capabilities at strategic ports along their trading routes.

Chemical resupply is quick, easy and handled exclusively by our Chemical Operations Team.

Using the FMDS provided by the crew after each ballasting operation, Ecochlor tracks chemical use and arranges chemical resupply to the vessel at the appropriate time and location. Working with the vessel's nominated agent, the Chemical Operations Team will coordinate the delivery of chemicals to the vessel at berth or anchor. During chemical resupply there is no direct human contact because the entire process is closed, using special equipment and only Ecochlor trained personnel. Resupply takes approximately a ½ day to complete; this includes the clean-up and the removal of empty IBCs and submission of a detailed service report. You can reach the chemical support team at chemops@ecochlor.com for the latest update on supply locations.

Ecochlor is part of the team in support of the ship's crew wherever they are in the world for the life of the vessel.

#### Service

Ecochlor has service engineers located throughout USA, Europe and Asia. We continue to strengthen our in-house team supported by carefully selected Ecochlor Authorized Installation and Service providers.

Our spare parts and service networks are positioned globally to respond quickly to our customer's requests; thereby, ensuring maximum system operation with minimum downtime.

The Ecochlor BWMS is simple, with only a few major components. It requires very little periodic maintenance. Since chemical resupply is performed twice a year, it allows Ecochlor technicians to regularly attend the vessel and identify maintenance requirements early. Shipowners state that this frequent review by our technician provides them with "regulatory piece of mind." Contact ecochlorservice@ecochlor.com for service support.