

# Nine Years of Operating an Ecochlor® Ballast Water Treatment System

by  
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*"The Ecochlor® Ballast Water Treatment System installed in 2005 onboard the bulk carrier Moku Pahu/HSTC-1 remains in operation and has been used at every opportunity. It works just as effectively today as it did when installed. Seeking out treatment makers with long-term industry experience should be an important consideration for vessel managers and owners." – comments by Tom McKenzie, Chief Engineer 2006 - 2012, Moku Pahu/HSTC-1.*

Matson Navigation Company, a leader in Pacific shipping, believes it has a responsibility to protect the environment of the communities it serves. Taking a pro-active approach to protect ecosystems, it has partnered with regulatory agencies and engineering firms to test innovative environmental technologies aboard its vessels. In particular, Matson's industry-leading "zero discharge" policy led it to be one of the first shipping companies to actively research and install a ballast water treatment system (BWTS) on its vessels. Tom McKenzie served as a Chief Engineer for Matson during this period and was closely involved in the installation and day-to-day operation of an Ecochlor® BWTS onboard the Matson operated vessel, Moku Pahu/HSTC-1 from 2003 to 2012. Tom subsequently joined Ecochlor and now serves as its Director of Global Service.

## Selecting a BWTS

In 2002, Matson initially outfitted a BWTS on its container ship, R.J. Pfeiffer. This was a joint agency demonstration project with the California State Lands Commission (CSLC), the U.S Fish and Wildlife Service, the Port of Oakland and the State Water Resources Control Board. The objective of the project was to acquire and distribute information regarding applied alternatives for ballast water management. The first system selected utilized a 2-step treatment process, beginning with cyclonic separation followed by ultraviolet irradiation (UV). However, after making several unsuccessful adjustments and testing new designs, the project was discontinued. The system failed primarily because vessel vibrations caused the quartz tubes to break inside the UV chamber and because the cyclone continuously clogged. After examining alternative technologies and reviewing test data from an Ecochlor® BWTS that had been installed on an Atlantic Container Line vessel, Atlantic Compass, in 2004, Matson formed another partnership with CSLC to use Ecochlor's chlorine dioxide technology aboard the



bulk carrier, Moku Pahu/HSTC-1. Chlorine dioxide (ClO<sub>2</sub>) has been used safely and economically for over 60 years in land-based applications and is unique in its effectiveness against all organisms regardless of water temperature, salinity or organics. Unlike elemental chlorine, ClO<sub>2</sub> does not form unwanted chlorinated by-products, even in highly contaminated water and can be safely and economically generated in a dilute solution on commercial vessels.

"The world of ballast water is complex and frustrating. No system is perfect," said McKenzie. "But if you look at land-based water purification and treatment applications, all large scale operations are chemical-based. After looking into the different methods that had been proposed to treat ballast water, it was clear to me that a chemical-based solution was the only real, long-term answer for treating ballast water. And among chemical-based technologies, the Ecochlor® BWTS stood out due to its unique chemistry and efficacy."

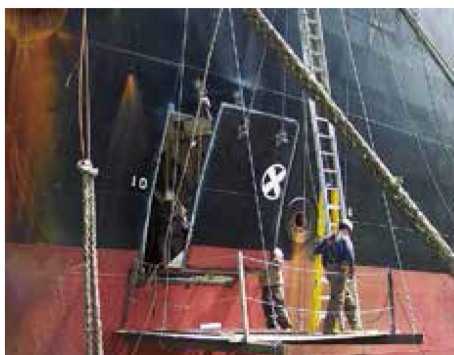
McKenzie went on to explain that due to stability concerns, the Moku Pahu/HSTC-1 could not use the pump out/refill method of ballast water exchange but needed to use the flow-through method instead. "This method was extremely hard

on the coatings of the main deck," said McKenzie, "increasing substantial wear on the ballast pumps. The Ecochlor® BWTS eliminated the need for ballast water exchange and reduced the issues of corrosion on the main deck and wear on the ballast pumps."

## BWTS Installation

The installation of an Ecochlor system aboard the Moku Pahu/HSTC-1 was performed safely, on schedule and without interruption to the vessel's operational performance. "During the installation," said McKenzie, "I represented the shipowner aboard the vessel. The Ecochlor system was installed in San Francisco Bay by a local shipyard at a lay berth. We cut a hole in the side shell and slid the entire system in. The vessel was idle between deployments, so there was no commercial impact to it."

McKenzie went on to discuss some of the cultural issues surrounding the introduction of a BWTS. "The maritime world is very resistant to change and our crew was no exception. This new equipment changed long-standing procedures on how to ballast the vessel, and at first, it was met with much resistance. But because Ecochlor's technicians were involved in the early operation of the



system and trained the crew, a number of issues were minimized during the transition period. Once senior officers became well-versed in operating the BWTS, the cultural issues of operating a new system largely went away."

## Chemical Resupply and Scheduling

One issue that did not cause significant operating or cultural problems was resupply. "Chemical resupply of the Ecochlor® BWTS," said McKenzie, "made sense to the Moku Pahu/HSTC-1 crew because of its resemblance to a bunkering operation. Crews are familiar with bunkering a vessel with fuel or lube oil and the Ecochlor resupply process is similar to how bulk liquids are supplied to a vessel.

Additionally, Ecochlor simplified the process by providing trained personnel who can safely complete the resupply with no additional crew involvement or any need to evacuate the vessel." McKenzie emphasized that the entire process is

closed, using specially selected equipment with no direct human contact to chemicals. Concern for the safety of the crew was paramount in the Matson team's decision-making process.

"Scheduling resupply was easy to manage with the help of our vessel management and the Ecochlor resupply team," said McKenzie. "Resupply could take place at either a load port or discharge port, and the internal storage tanks did not have to be near-empty to resupply. If the Moku Pahu/HSTC-1 was transiting in a particular port or region, and if it was economically beneficial for us to resupply the Ecochlor® BWTS there, our owners were encouraged take the opportunity."

## Conclusion

Captain Christian Johnsen, Master of the Moku Pahu, continues to operate the Ecochlor BWTS. "The Ecochlor system," says Captain Johnsen, "has worked well for us in that its relatively small footprint easily fits into our existing ballast system. It also uses an almost negligible amount of electrical power and works effectively in all water conditions, including the sediment-filled, biologically-saturated waters off Chittagong, Bangladesh. Ecochlor has shown their continuing commitment to Matson by reliably providing support, scheduled service and chemical resupply, as needed."

## Tom McKenzie Background

**"He works closely with local entities, attending factory acceptance trials to ensure QA/QC, commissioning of systems and ensures that Ecochlor service is operating efficiently and seamlessly."**

Ecochlor hired Tom McKenzie in October of 2012



as the Global Service Director. As Director, he is responsible for all after sales service and support of the Ecochlor® BWTS globally.

This includes resupply, routine and unplanned maintenance. He works closely with local entities, attending factory acceptance trials to ensure QA/QC, commissioning of systems and that the Ecochlor service is operating efficiently and seamlessly. In addition, he provides training on the Ecochlor® BWTS to vessel crews, and answers operational questions 24/7 via email, telephone or onboard ship.

# Greek Shipping Hall of Fame welcomes new sponsors for event

## ABS, Clarksons and Liberian Registry lead support for Induction Ceremony & Dinner

The Greek Shipping Hall of Fame is pleased to announce that two more prestigious maritime organisations have agreed to sponsor the Greek Shipping Hall of Fame Induction Ceremony & Dinner 2015.

The event, that will take place in Athens during the evening of Monday 27 April 2015 at the Athens Hilton, will celebrate Greek shipping and pay tribute to historic personalities who have helped to shape the industry, including the latest Inductees to the Hall of Fame who will be unveiled during the evening. A portion of the proceeds from the event will be donated to a Greek children's charity.

The Liberian International Ship & Corporate Registry has now confirmed it will be a Co-Lead Sponsor of the occasion.

Scott Bergeron, Chief Executive Officer of the Liberian Registry comments: "The shipping ties between Greece and Liberia have existed from the very origin of the Liberian Registry when the Stavros Niarchos-owned oil tanker World Peace

became the first ship to be registered under the Liberian flag in 1949. Onassis followed the next day. "The strong relations of Greek shipping and the Liberian flag become even stronger and are generally considered as synonymous. With over 800 Greek-owned ships on the Register, Liberia is the most popular flag amongst Greek shipowners. Therefore, it is only fitting that the Liberian Registry pays tribute to the leaders of the Greek shipping community through its partnership with The Greek Shipping Hall of Fame."

The Liberian Registry joins ABS and Clarksons as Lead Sponsors of the Induction Ceremony & Dinner on 27 April.

In addition a second freshly-confirmed sponsor, Lloyd's Register, has added its support for the upcoming event.

Previously-announced sponsors include Aegean Marine Petroleum, The Baltic Exchange, Bureau Veritas, Moore Stephens and Thomas Miller as Premium Sponsors.

Sponsors to date also include ClassNK, Hellenic War Risks, UK Defence Club, UK P&I Club and Vilmar International.

"We are delighted to have ABS, Clarksons and the Liberian Registry as Co-Lead Sponsors of this event," commented Caroline Lowry, director of Phoebe Media & Events, appointed by the Greek Shipping Hall of Fame as official event manager for the Induction Ceremony & Dinner 2015. "We are grateful to have the support of such prestigious organisations," she added. "Moreover it is especially pleasing that so many of the event-sponsors to date have such a long history of partnership with the Greek shipping industry."

**The Greek Shipping Hall of Fame resides at [www.greekshippinghalloffame.org](http://www.greekshippinghalloffame.org)**

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