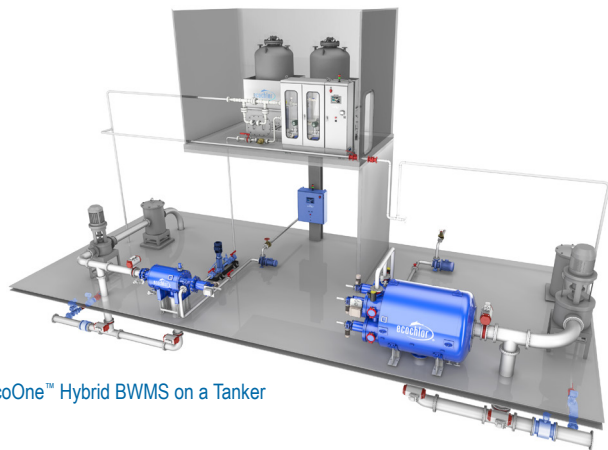




Ballast Water Management System



# EcoOne™ Hybrid BWMS Specifications Sheet



EcoOne™ Hybrid BWMS on a Tanker

## Company Information

**Company Name:** Ecochlor, Inc.  
**Founded:** 2001  
**Headquarters:** USA  
**International Sales:** Cyprus, Greece, Germany, Hong Kong, Japan, Republic of Korea, United Kingdom  
**Agent Offices:** China, Cyprus, Greece, India, Norway, Turkey, United Arab Emirates  
**Website:** www.ecochlor.com  
**Treatment Technology:** Filtration + Chlorine Dioxide (ClO<sub>2</sub>) Chemical Injection or ClO<sub>2</sub> Chemical Injection alone

## Certificates & Type Approvals

**IMO Type Approval**  
 BWMS Code: Qtr 3 2021 (pending)

**IMO G9 Active Substance**  
 Approval Date: 6 Oct 2010

**USCG Type Approval**  
 Certificate Date: Qtr 4 2021 (pending)

**Class Type Approvals**  
 ABS, BV, LR, KR - Certificate Date: Q1 2022 (pending)

**Flag State Type Approvals**  
 IMO Cyprus Type Approval, IMO Hellenic Type Approval, IMO Norwegian Type Approval - Certificate Date: Q 1 2022 (pending)

## IMO & USCG Type Approval Limitations

**Flow Rates (TRC):** 500 - 16,200 m<sup>3</sup>/hour

**ClO<sub>2</sub> Dose:** 4.25 mg/L with filter; 4.6 mg/L without filter

**US Flag Hazardous Approved:** Yes

**Minimum Hold Time:** 24 hours, plus confirmation of MADC

**Maximum Allowable Discharge Concentration:** Less than 0.2 mg/L ClO<sub>2</sub>, confirmed using an in-tank sample

**Temperature:** Not applicable

**Electrolyte Feed Temp./Salinity:** Not applicable

**Salinity:** No restrictions with filter; ≥ 1 PSU without filter

**TRO:** No TRO Sensors

**Discharge Standards:** No neutralization or retreatment at discharge

## Ecochlor Components

**ClO<sub>2</sub> Generator**  
 Option for Series 75, 100, 150, 200, 250, 300



Ecochlor BWMS Generator, Chemical Storage Tankers and Treatment System Control Panel

### Precursor Chemical Storage Tanks

Two self-contained chemical storage tanks. The first is a vented carbon steel tank lined with Halar (ECTFE). The second is a vented 316L stainless steel tank

### Main and Aft Peak Tank Filtration System

Filtersafe E-series 40 micron filters (standard screen material provided: 904L SST)

### Motive Water Booster Pump

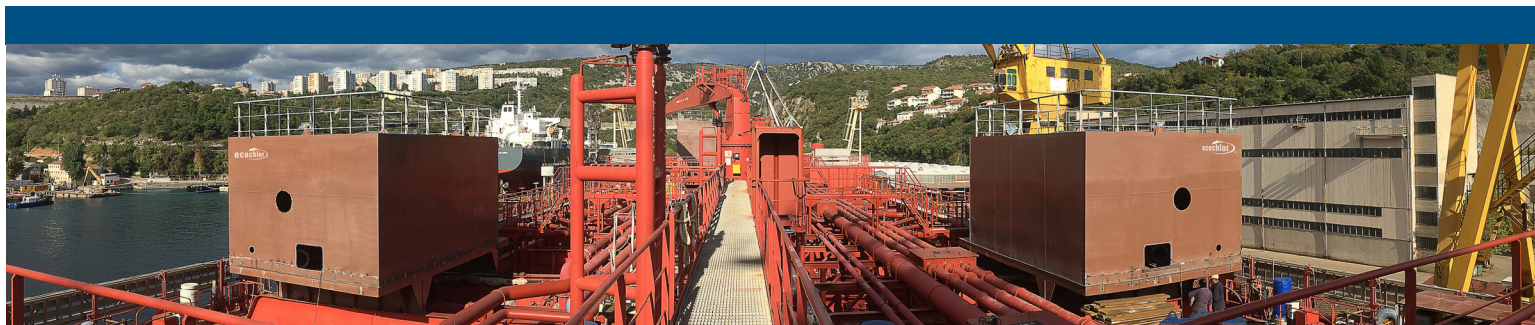
Vertical, multi-stage centrifugal pump sized to supply motive water that ranges from 1.3 - 45.4 m<sup>3</sup>/hour

### System Control Panels

Treatment System Control Panel (CP-1) is mounted on the same skid as the ClO<sub>2</sub> Generator, Auxiliary Control Panel (CP-2 & CP-4 as required) are located local to the ballast, Remote Panel (CP-3) is installed in the Ballast/ Cargo Control Room or Deck Office for monitoring system operation

### Piping/Components

Piping for one chemical storage tank is Alloy 20. The second storage tank has 316L SST piping. Chlorine dioxide piping is Glass Reinforced Epoxy (GRE). Teflon-lined Steel Pipe and other materials acceptable for use pending discussion and approval from Ecochlor



## Ecochlor System Details

### Maximum Flow Rate Capacity of an EcoOne™ Hybrid BWMS

One (1) BWMS can treat a ballast flow rate of up to 16,200 m<sup>3</sup>/hr with an option for up to three (3) ClO<sub>2</sub> injection points

### Power Consumption

Power is required for the operation of the filter(s), filter cleaning suction pump, generator, control panel, motive water booster pump and filters, when used. Specific power requirements must be calculated on an individual system basis. When operating in a “No Filter Mode” the power requirements will range from 4 to 6 kW. When operating in a “With Filter Mode” the power requirements may range from 6 kW to 50 kW, depending on system type

The high end of the “With Filter Mode” power requirements will only occur when the filter is in continuous mode for turbid water

### Weight

Dry weight of an Ecochlor generator and chemical storage tanks range from 4,700 to 8,400 kg. Chemical tank size is determined by total annual ballast volume to be treated

### Footprint

Actual footprint will be determined based on the selected Ecochlor® BWMS Model. The range of possible footprints for the major Ecochlor BWMS components is below:

#### Treatment System (Generator + Precursor Chemical Storage Tanks)

Ranges from 11.3 - 18.4 m<sup>2</sup>

#### One Filter

Horizontal orientation: Ranges from 1.4 - 7.3 m<sup>3</sup>

Vertical orientation: Ranges from 0.5 - 5.0 m<sup>3</sup>

### Motive Water Source

Sea water or fresh water

### Ballast Operation Data Storage

The minimum amount of data storage is two years

## Installation

### BWMS Standard Delivery Time Frame

Short delivery times; contact your local sales representative to discuss specific details

### BWMS System Delivery Method

Ecochlor System delivery terms are EXW or FCA (Incoterms® 2020) each place of manufacture, as follows:

- **Generator, Control Panels and Other Components:** Currently manufactured in the United States
- **Filter Assemblies:** Currently manufactured in Haifa, Israel or Hong Kong
- **Tank Assemblies and Other Components:** Currently manufactured in Shanghai, China
- **Project-specific additional components:** Location of manufacture

## Training, Service & Chemical Resupply

### Training Selections

Shipboard training options, Client-site training (including portable HMI Simulator), Computer-based training program, Ecochlor Training Center in the United States

### Chemical Resupply Schedule

Typically, two times a year depending on ballasting operations of the vessel

### Chemical Resupply Locations\*

Ecochlor has a significant number of chemical storage hubs and resupply locations strategically positioned around the globe. We have further plans to develop more locations that align with the needs of our client-base. Chemical Resupply locations followed by an asterisk (\*) are under development.

**Chemical Resupply Hubs:** Emirate of Dubai, Houston, Rotterdam, Singapore  
**Chemical Resupply Locations:** Australia, Brazil, Belgium, Canada, Croatia, Denmark, Emirate of Sharjah, Estonia, Finland, France, Germany, Greece, Italy, Latvia, Lithuania, Malaysia (Mainland), Panama\*, Poland, Republic of Korea, Saudi Arabia, Slovenia, South Africa\*, Spain, Sweden, United Kingdom

### Spare Parts Support Network Location

Netherlands, Singapore, United States

### Ecochlor Global Service Engineer Locations

China, Netherlands, Poland, Russia, Singapore, Sweden, United Kingdom, United States

### Authorized Service Vendor Locations

Australia, Brazil, China, Emirate of Dubai, Greece, Netherlands, Republic of Korea, Saudi Arabia, Singapore, Turkey, United Kingdom

### Standard Warranty Two (2) years

### International Service Support

Ecochlor Service Engineers are strategically located across three major time zones to ensure quicker response time to vessel crews located anywhere in the world. Contact [ecochlorservice@ecochlor.com](mailto:ecochlorservice@ecochlor.com) for service support or [chemops@ecochlor.com](mailto:chemops@ecochlor.com) to reach the chemical resupply support team.