



Ballast Water Management System



Specification Sheet



Company Information

Company Name: Ecochlor, Inc.
Founded: 2001
Headquarters: USA
International Sales: Cyprus, Canada, Greece, Germany, Hong Kong, Japan, South Korea, United Kingdom, United States
Agent Offices: China, Cyprus, Greece, India, Norway, Turkey, United Arab Emirates
Website: www.ecochlor.com
Treatment Technology: Filtration + Chlorine Dioxide (ClO₂) Chemical Injection

Certificates & Type Approvals

IMO Type Approval

BWMS Code: August 2020

IMO G9 Active Substance

Approval Date: 6 Oct 2010

USCG Type Approval

Certificate Date: 10 Aug 2017

Class Type Approvals

ABS, BV, LR, RMRS, DNV GL, KR

Flag State Type Approvals

IMO Cyprus Type Approval, IMO Hellenic Type Approval, IMO Norwegian Type Approval

IMO & USCG Type Approval Limitations

Flow Rates (TRC): 500 - 16,200 m³/hour

ClO₂ Dose: 4.25 mg/L

US Flag Hazardous Approved: Yes

Minimum Hold Time: 24 hours, plus confirmation of MADC

Maximum Allowable Discharge Concentration: Less than 0.2 mg/L ClO₂, confirmed using an in-tank sample

Temperature: Not Applicable

Electrolyte Feed Temp./Salinity: Not Applicable

Salinity: Not Applicable

TRO: No TRO Sensors

Discharge Standards: No neutralization or retreatment at discharge

Additional Testing

Tank Corrosion

Corrosion Evaluation of Test Panels Exposed to ClO₂ Treated and Untreated Seawater (Corrosion Testing Laboratories, Inc.); Test of ClO₂ on Epoxy Ballast Tank Coatings (International Paint, Inc.); Laboratory Immersion Corrosion Testing of Ballast Panels in Chlorine Dioxide Treated Artificial Seawater (NovaChem)

Ecochlor Components

ClO₂ Generator

Series 75, 100, 150, 200, 250, 300

Filter

Filtersafe E-Series (Standard Screen material provided: 904L SST)

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.

Motive Water Booster Pump

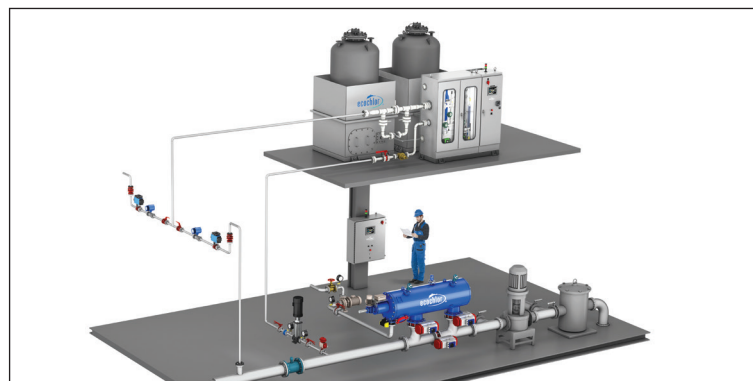
Vertical, multi-stage centrifugal pump sized to supply motive water that ranges from 1.3 - 45.4 m³/hour

System Control Panels

Treatment System Control Panel (CP-1) is mounted on the same skid as the ClO₂ Generator, Filtration System Control Panels (CP-2 & CP-4 as required) are located local to the filters, 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.



Schematic diagram of the Ecochlor ballast water management system (BWMS) retrofit on a bulker



Ecochlor System Details

Maximum Flow Rate Capacity of an Ecochlor BWMS

One (1) BWMS can treat a ballast flow rate of up to 16,200 m³/hr with an option for up to three (3) ClO₂ injection points

Power Consumption

Power is required for the operation of the filter(s), filter cleaning suction pump, generator, control panel and motive water booster pump. Power requirements are slightly higher when including an aft peak filter in operation.

Power Consumption with Flow Rates from 500 - 3,000 m³/hour

Power requirements range from < 7 kW with maximum (based on continuous filter cleaning for turbid water) at < 30 kW

Power Consumption with Flow Rates from 3,000 -10,000+ m³/hour

Power requirements range from <14 kW with maximum (based on continuous filter cleaning for turbid water) at <50 kW

Weight

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

Footprint

Treatment System and FilterSafe Filter(s): Footprint ranges are based on the Ecochlor BWMS Model and varying filter sizes based on ballast flow rate

Treatment System (Generator + Precursor Chemical Storage Tanks)

Range from 10.9 - 21.2 m²

One Filter (horizontal)

Range from 1.4 - 7.3 m²

One Filter (vertical)

Range from 1.4 to 6.3 m²

Filter Pressure

Filter pressures are 1.2 barg minimum operating 0.4 barg DP

Motive Water Source

Sea water or fresh water

Ballast Operation Data Storage

The minimum amount of data storage is two years

Installation, Service & Chemical Resupply

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, China
- **Tank Assemblies and Other Components:** Currently manufactured in Shanghai, China
- **Project-specific additional components:** Location of manufacture

Training Selections

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

Chemical Resupply Schedule

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

Chemical Resupply Locations*

Australia, Brazil, Belgium, Canada, Croatia, Denmark, Emirate of Dubai, Emirate of Sharjah, Estonia, Finland, France, Germany, Greece, Italy, Japan, Latvia, Lithuania, Malaysia (Mainland), Netherlands, Poland, Republic of Korea, Singapore, Slovenia, Spain, Sweden, United Kingdom, United States *Locations are continuously expanding to align with the needs of our client-base.

Spare Parts Support Network Location

Netherlands, Singapore, United States

Ecochlor Service Engineer Locations

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

Authorized Service Vendor Locations

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

Standard Warranty Two (2) years

International Service Support

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