

# BIO SEA

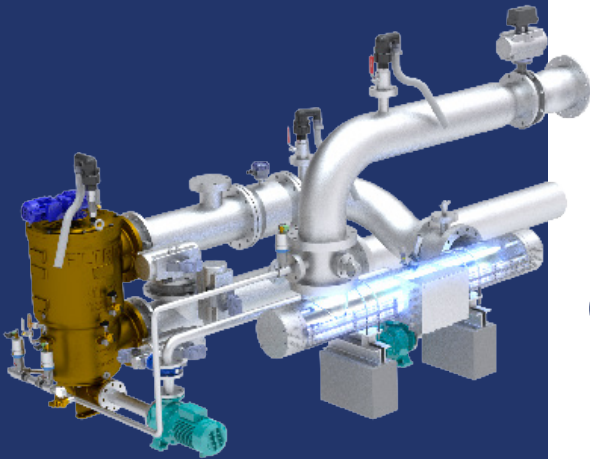
by BIO-UV  
Group



# Ballast Water Treatment

## M Range

### BIO-SEA® M From 500 to 2100 m<sup>3</sup>/h



Other environmentally friendly solutions for water treatment onboard vessels:

- Drinking water
- Grey waters
- Legionella
- Pools & spas

BIO-UV Group, has a 20+ years experience in designing and manufacturing water desinfection systems using chemical-free technologies (UV, Ozone, Salt Electrolysis) for various applications including BIO-SEA® ballast water treatment system.



## Benefits

- UV dose automatic regulation depending on water quality
- Tested in low UV water transmittance conditions with best results
- Chemical free, zero by-product, zero active substances
- Not impacted by water temperature, neither by salinity
- Automatic operation, easy-to-use interface
- First Class marine components
- Compact unit with a lowest height requirement for fitting
- Safe and easy to install, operate and maintain
- Cost-efficient solution, low OPEX

## Certified sales & service partners for turnkey solutions

From a simple onboard visit, or a 3D laser scanning survey, to a global turnkey package, BIO-SEA cooperates closely with a worldwide service network of certified partners and suppliers for services ranging from designing, to onboard installation and commissioning or annual check.

Specifications	
Treatment capacity	From 190 to 2100 m <sup>3</sup> /h
Power supply	400-440 V ; 50-60 Hz ; 3-phases
Power consumption per UV reactor	12 kW - 22 kW
UV lamp lifetime	5000 hours
Environmental operating conditions	T°= 0°C - 55°C ; H% ≤ 95
Global head loss	< 0.55 bars
Operating pressure	1.5 - 10 bars



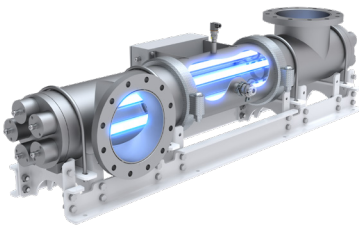
# BIO-SEA® M



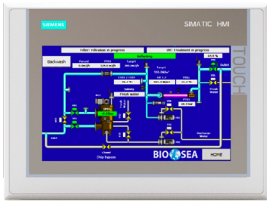
## Mechanical filtration

- 20µm screen to retain suspended solids and zooplankton
- Scaled to size depending on the flow rate to treat
- Automatic backwash with standard suction pump delivered with the system
- No disruption of the filtration process during the backwash cycle and no significant variation of the treated water flow rate
- Two types of filters (Hydac or Filtrex models) to fit all ships requirements

## UV disinfection



- 254 SMO reactor designed with a reduced number of polychromatic, medium pressure, high intensity UV lamps for optimum cost and treatment results
- UV lamp protected by high-quality quartz sleeve
- Design optimized by CFD (Computational Fluid Dynamic) taking into account water quality (UV transmittance) and fluid speeds, allowing for easier cleaning and maintenance
- No disruption of the filtration process during the backwash cycle and no significant variation of the treated water flow rate



## Monitoring & control

- Touchscreen interface
- Fully automated operating modes for ballasting, de-ballasting, cleaning and stripping
- Sensors and PLC monitoring: UV and temperature sensors, flow meter, pressure transmitters, automatic valves
- Operations and alarms covering (24 months), automatic generation of PDF reports
- Bus communication for remote control, integration to vessel automation system and control command, GPS connection

Available options: remote control panels (9" or 15" auxiliary touch screen), by-pass valves, BIO-SEA Clean (automatic quartz sleeve cleaning system)



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