ESVA Solutions

BIO SEA

IMO & USCG Type Approved

BALLAST WATER TREATMENT STANDARD RANGE

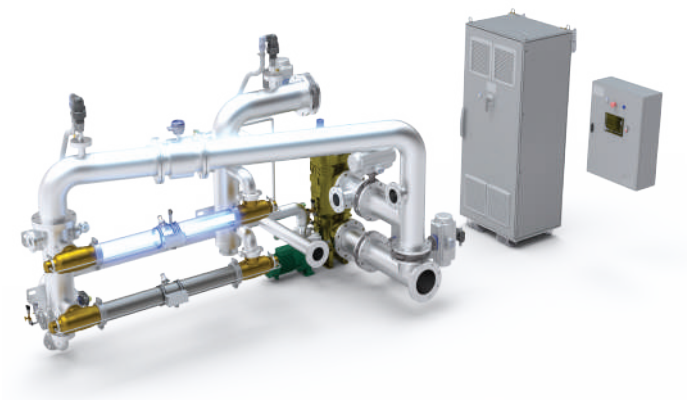
From 50 to 2000 m³/h

DNV·GL ABS Lloyd's Register BUREAU VERITAS

The BIO-SEA systems are **IMO and USCG Type Approved.**
With one BIO-SEA system, shipowners will be able to operate under **IMO or USCG** mode.

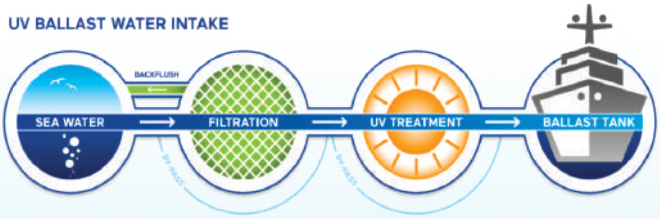
BIO-SEA by BIO-UV Group is the first and only system developed and manufactured in France for the treatment of all types of ballast water. BIO-SEA is compliant with **IMO D-2 (New G8)** discharge standard and **USCG regulation** and has **the best holding times on the market at full flow.**

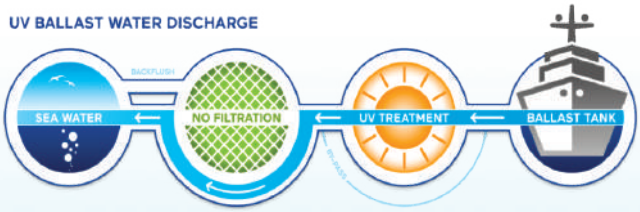
BIO-SEA B02-0300
modular retrofit installation



BIO-SEA B02-0300
skid version (power cabinet embedded)

Ballasting / De-ballasting process





BENEFITS

- **UV dose automatic regulation depending on water quality**
- **Tested in low UV water transmittance conditions with best results**
- **Safe: chemical free, zero by-product, zero active substances**
- **Not impacted by water temperature, neither by salinity**
- **Easy to install, operate and maintain**
- **Automatic operation, easy-to-use interface**
- **First Class marine components from reliable European suppliers**
- **Cost efficient solution, low OPEX**
- **Available in flexible and scalable skid design, semi-modular and loose components versions to fit in all ships environment**

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BIO SEA by BIO UV

www.esvasolutions.com

1ST STEP : MECHANICAL FILTRATION

- **20µm screen** to retain suspended solids and zooplankton
- **Sized to scale** depending on the flow rate to treat
- **Automatic backwash**
- **Additional suction pump** as standard to allow a complete and performing backwash
- **No disruption of the filtration process** during the backwash cycle and no significant variation of the treated flow rate

2ND STEP : UV DISINFECTION

- **Titanium reactor** equipped with a single polychromatic, medium pressure, **high intensity UV lamp for optimum treatment results**
- High-quality quartz sleeve protecting the UV lamp
- Reactor designed with **only one lamp per reactor** minimizing the total number of lamps per system, resulting in lower operational costs
- Optimized design by CFD (Computational Fluid Dynamic) taking into account water quality (UV transmittance) and fluid speeds, **allowing for easier cleaning and maintenance**
- Lamp driven by electronic ballast allowing precise management of the UV lamp power to optimize its intensity, **reduce the power consumption** and prolong its life
- Monitoring through UV sensor to **adjust the intensity** for a compliant water treatment

MONITORING AND CONTROL

- **Standard fully automated operating modes** for ballasting, de-ballasting, cleaning and stripping
- Monitoring through sensors and PLC: UV and temperature sensors, flow meter, pressure transmitters, automatic valves
- **Touch screen interface** for easy friendly use, control and visualization
- **Recording of operations** and alarms covering 24 months, automatic generation of PDF reports
- Bus communication for remote control, integration to vessel automation system and control command

Option for an ultimate experience: remote control panels (7" or 15" auxiliary touch screen), RS 485 communication cabinet, BIO SEA Clean (automatic quartz sleeve cleaning system)

SPECIFICATIONS	
Treatment Capacity	from 50 to 2000 m^3/h
Power Supply	400 – 440V; 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

Turnkey worldwide certified sales and services partners

From a simple onboard visit, or a 3D laser scanning survey, to a high-level global turnkey package, BIO-SEA works with a worldwide network of certified partners and suppliers for the whole range of BIO-SEA BWTS.

Other onboard BIO-UV Group environmental UV treatment solutions

Ballast Water | **Reuse** | **Drinking Water** | **Grey Waters** | **Legionella** | **Pools & Spas**

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