



RWO

Bilge Water Treatment

MARINE WATER TECHNOLOGIES

Total Water Management On-board Ships and Offshore Platforms

Who We Are

For more than 45 years the RWO experts develop, design, manufacture and service high-quality technologies for water treatment onboard ships and offshore installations, both for new installations or retrofitting. The product portfolio includes the treatment of drinking and process water as well as pollution prevention equipment for oily waters, ballast and wastewater as well as a comprehensive range of after sales services. RWO is the worldwide market leader in the treatment of marine oily water. The main offices are located in Bremen, Germany.

Worldwide Sales & Service Network

RWO's international network of more than 40 qualified sales/service stations ensures short communication links between customer and manufacturer, making us the ideal partner for companies in the maritime sector. Contact us today to find out more about the way we work.



Key Competences

The RWO brand stands for decades of experience in the construction and service, in all field of maritime water treatment, inclusive of:

- > Oil Water Separation
- > Wastewater Treatment
- > Drinking Water Treatment
- > Process Water Treatment

Key Benefits

- > High quality in every aspect
- > Worldwide network and support
- > Comprehensive experience in water treatment engineering
- > Get your water management solution from the market leader in OWS

RWO

RWO's Classic: OWS-COM Oily Water Separator

Complying With Your Challenges Fulfilling the 5 ppm Standard

More than 16000 ships have already been equipped with RWO's oily water separators since RWO started its business in 1975. The OWS-COM system uses a combination of **highly effective open porous coalescer with automatic backflushing, together with a second stage emulsion breaking oil and hydrocarbon polisher.**

The periodical backflushing keeps the coalescer surface clean and offers long lasting operation according to IMO MEPC.107(49). The OWS-COM is part of RWO's leading **Total Water Management** offer.

Reliably reaches

**5 ppm
limit**

confirmed by
DNV GL and LR

- > IMO type approved
- > MED certified by German Administration
- > Approved by USCG, ABS, DNV-GL, RMRS, RRR, CCS



Oil Content Monitor

The RWO oily water separating system is equipped with a 15 ppm oil content alarm device, type tested and approved in accordance with IMO Resolution MEPC.107(49). During flushing of the sensor the overboard discharge valve is in recirculation mode.

According to IMO MEPC.107(49) an additional hand-operated 3-way valve is installed downstream of the oily water separator in the overboard line to recirculate the water to the bilge whenever required during Port State Control.



Automatic Bypass

To extend the operating life of the demulsifier, an automatic bypass is fitted to the separating system. The oil content monitor periodically checks the water quality of the first stage separator. If below the set max. value, the demulsifier is bypassed. This results in lower operational cost and long product life.

Key Features & Benefits

- > Most economical: second stage is bypassed whenever possible
- > Easy to install and maintain
- > Oil monitoring device continuously checks effluent
- > Suction type: preserves pump from attrition
- > Most compact: suitable for newbuildings and retrofits
- > Improved hydrodynamics for longer polisher lifetime

Type	Capacity m ³ /h	Length mm	Width mm	Height mm	Power kW	Empty weight kg
0.1	0.1	715	650	1100	0.8	125
0.25	0.25	960	750	1005	2.6	180
0.5	0.5	970	750	1050	3.2	195
1.0	1.0	1170	800	1220	3.2	270
2.5	2.5	1510	1060	1485	3.7	457
5.0	5.0	1825	1385	1715	4.6	757
10.0	10.0	2155	1575	2000	5.7	1195

CBM+ Bilge Water Compliance Monitoring System

Enabling Safe Discharge of Uncontaminated Water Overboard

The clean bilge monitoring system CBM+ is the monitoring system for tankers, cruise vessels and other ships with additional focus on environmental compliance. It is designed to monitor and control liquid discharges overboard your vessel in respect of its oil content. The system prevents the discharge of non-compliant oily water mixtures by automatically recirculating the liquid to the bilge water tank if the oil content is above a predetermined limit.

This compact system can be installed as a last monitoring and control device in the outlet pipe prior to the overboard discharge valve for safety purposes. Although designed with bilge water in mind other discharges like clean drains e.g. condensate from air conditioners can be monitored as well. The system independently monitors whether the maximum oil content is reached depending on the selected set-point of 5 or 15 ppm. Lower set-points can also be chosen on site.



CBM+ is a reliable system prior to discharging bilge water

The unit enables the safe discharge of uncontaminated water overboard. However, if there is oil present and it reaches a specific limit, a 3-way valve automatically returns the liquid to the bilge tank for further treatment. This way compliance with IMO MEPC.107(49), particular sensitive sea areas (PSSA) or other class or vetting regulations can be ensured.

Proof of Location by GPS Data

CBM+ includes an input of GPS data from the ship and multiple electrical potential free contacts that enable the connectivity to the ships' AMS system.

The system records and stores data on date, time, location, flow rate and oil content of every operation for 18 months. All relevant data is available via the system's touch screen and can be downloaded. This enables the crew to present the discharge data to port state control or other involved authorities.

Tamper Proof

The unit is designed as a standalone device, ready for plug and play and does not require any connection to an existing oily water separator. The housing of this tamper-proof designed unit is locked and any opening of the doors is recorded.

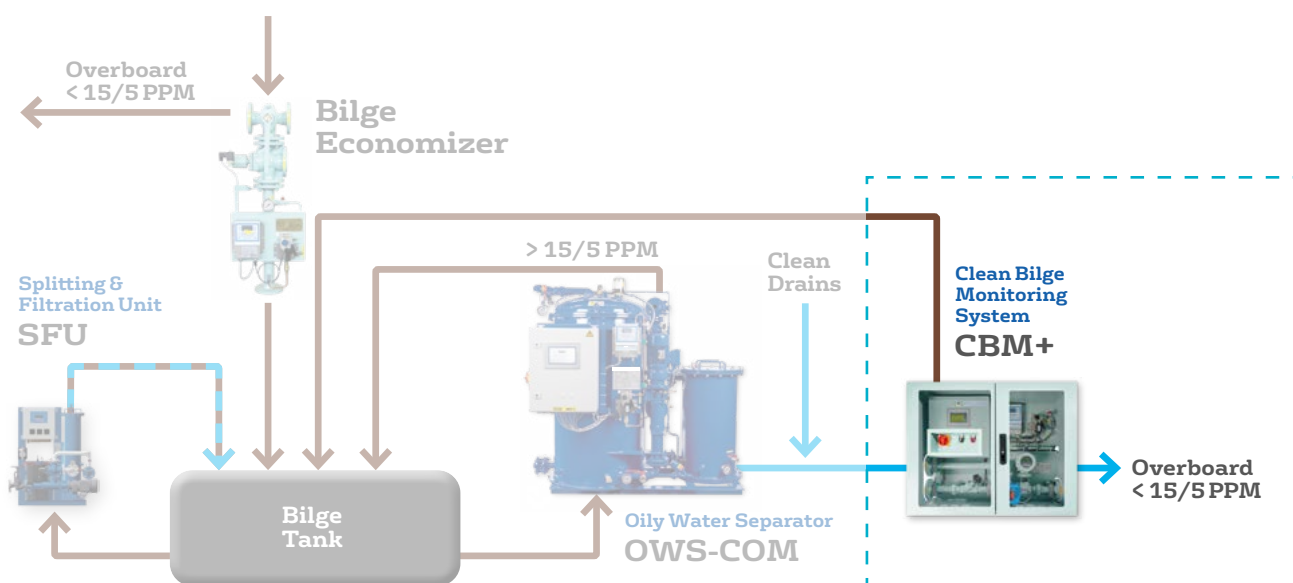
While the ship is in port or restricted areas, a so called 'Port Switch' can be enabled. In this mode the 3-way valve is locked in recirculation mode to prevent any overboard discharge.

Compliance

CBM+ is the perfect tool to prove that your vessel and crew comply with the respective laws and regulations.

Key Features & Benefits

- > Final compliance monitoring system directly prior to overboard discharge
- > Easy to read display of ppm curves
- > Tamper proof record of all relevant data
- > Connectivity to ships AMS
- > Compact plug & play design
- > Tamper proof housing
- > High quality components made in Germany



SFU Emulsion Splitting and Filtration Unit

Pre-treatment of Bilge Water to Relieve Your Oily Water Separation

Oily water separators are able to treat bilge water and ensure that it can be discharged overboard in an environmentally friendly way. Changing compositions and concentrations, the potential to emulsify as well as the increasing presence of particles and other contaminants in the bilge water often complicates the entire process.

For this reason RWO has developed the Splitting and Filtration Unit (SFU). The system is part of RWO's leading **Total Water Management** offer. This special pre-treatment system eases the treating of bilge water and offers key benefits to ship operators and owners.



SFU helps treating bilge water by splitting emulsions

SFU – Splitting and Filtration Unit

Emulsions and particles complicate the treatment of bilge water and cause a high amount of consumables for oily water separators. To relieve OWS-units from particles and save consumables, a pre-treatment can be installed.

RWO's SFU type is able to pre-treat difficult bilge waters and therefore to reduce the costs of operation significantly. Therefore, a fully automatic three-stage process is used, consisting of the addition of a special splitting agent, slow oil separation from the water and a filtration unit to remove all particles. Operators can also switch off the oily water separator and use the SFU system as a stand-alone filtration unit.

Advantages

- > The SFU splitting and filtration unit has been developed to support oily water separators if difficult compositions of bilge water exists.
- > The pre-treatment of the bilge water works with emulsion splitting combined with down stream filtration, so even **stable emulsions can be handled**.
- > The advanced removal of particles and splitting the emulsion in the bilge water storage tank saves consumables in the downstream oily water separator.

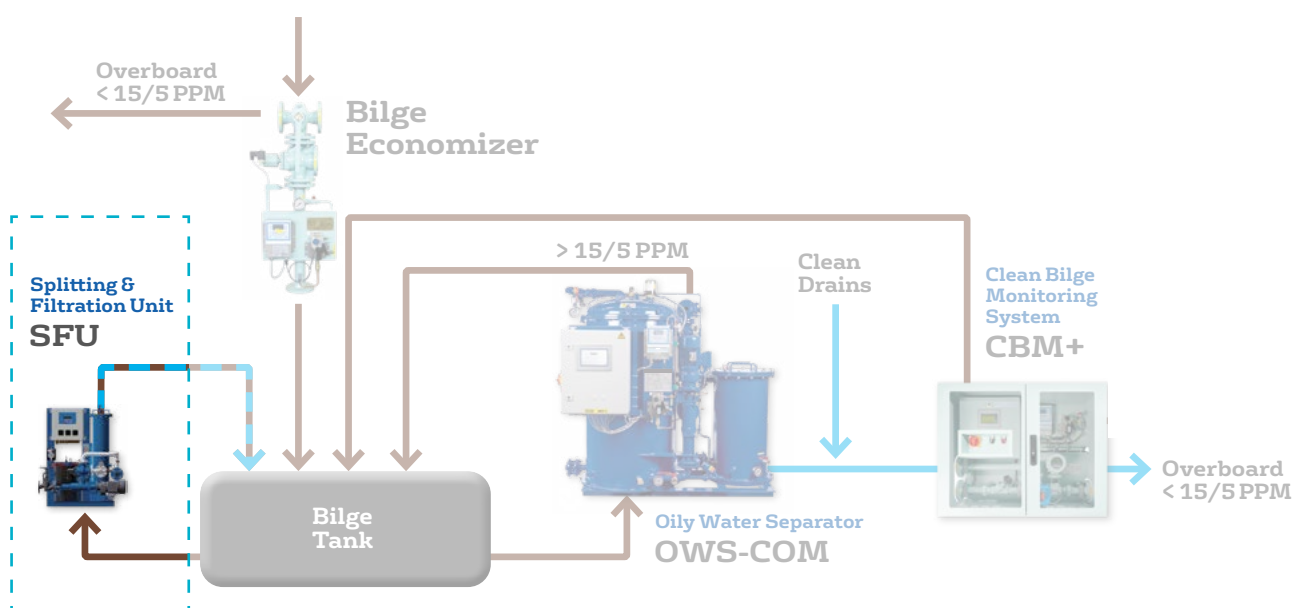
How it Works

The process of emulsion splitting and particle removal takes place automatically in three consecutive steps:

1. Addition and mix-in of a defined quantity of splitting agent to the bilge water
2. Settling phase with coalescence processes
3. Reduction of particle concentration by means of filtration

Key Features & Benefits

- > Saves consumables for downstream oily water separator
- > Extends operational life span of OWS
- > Easy to install and easy to handle
- > Worldwide service & support



RWO

Bilge Economizer Oil-water Separation System

A Small Issue With Big Result

On board every ship, so called 'clean drains' are treated in oil-water separation systems and strain machines and resources. These 'clean drains' usually consist of leakage and condensate from equipment used for seawater, fresh water, steam, air conditioning and other systems, which are usually not contaminated by oil.

Based on the IMO guidelines for 'Integrated bilge water treatment systems' (IMO MEPC.1/ Circ.642), RWO has developed the Bilge Economizer.

The Bilge Economizer allows ship operators to discharge the 'clean drains' overboard without any further treatment.

As a result, the bilge water volume handled by the oily water separator is much smaller, which reduces operating cost significantly.



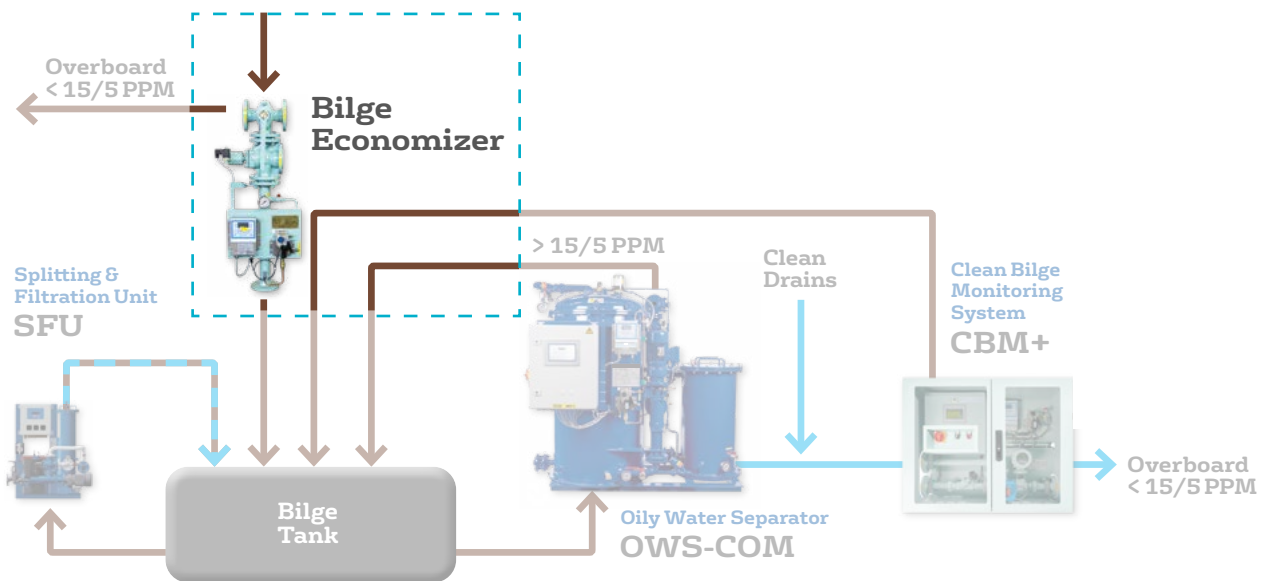
Bilge Economizer to discharge clean drains safe and efficient

How it Works

The Bilge Economizer is an easy to operate stand-alone oil monitor with automatic and manual 3-way valves. It is installed behind the discharge pump of the 'clean drains' holding tank. As long as the oil content of the 'clean drains' is below the set discharge limit value, it is discharged directly overboard. Whenever the oil content exceeds the set limit value, it will be diverted to the bilge holding tank for further treatment by the oily water separator.

Key Features & Benefits

- > Less operation cycles of OWS system required (reduced OPEX)
- > Smaller oily water separator (reduced CAPEX)
- > Less maintenance and reduced labour costs
- > Can alternatively be supplied as loose components



Always Near – Always Available

RWO's network of more than 40 qualified sales and service center throughout the world ensure customer benefits due the short communication links to short response times. Thereby, our wide ranging expertise and our products, as well as services has made us a reliable partner in the maritime industry.

Spare Parts

RWO offers original spare parts for all types of water treatment applications. Please contact us for further information: spares@rwo-gmbh.com

Service

Depending on our customers' demands, we offer an individually designed range of services. With our large service network, and our competence in process engineering, we have optimized our service offer: service@rwo-gmbh.com

The Service Range Includes

- > Full service including preventive maintenance, repairs, supply of spare parts and consumables as well as troubleshooting
- > Optimization and updating of the control and measuring technology
- > Support helpline: standby with agreed response times
- > Training of the operating staff

Keep the Heart of Your OWS Protected

It is crucial to have the right spare parts when you operate your oily water separator. Our spare part kits are available from an Emergency Kit upto a Docking Kit.

- > **Emergency Kit**
Reliable protection right from the start. A reliable kit covering basic parts you need in case of 'emergency'.
- > **Regular Kit**
The best choice to keep your machinery running. This kit contains control cabinet, mechanical and consumables components.
- > **Intermediate Kit**
According to maintenance schedule this kit ensures operational reliability after 2,5 years operation. Recommended to this kit is the **OWS – Basic Service Inspection** to extend the guarantee.
- > **Docking Kit**
An all-round kit, containing additional extended components at recommended interval of 5 years of operation. Recommended to this kit is the **OWS – Extended Service Inspection** which facilitates the renewal of the IOPP-Certification incl. the OMD-Recalibration.

Key Features & Benefits

- > Minimized lifecycle costs
- > Improved OWS performance with OEM-parts
- > Minimized unexpected failures
- > Keeping downtime at a minimum
- > Ensuring operational efficiency
- > Correct and timely maintenance



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