Introduction to Oily Water Separators — study guide

An oily water separator lets a ship discharge bilge water only when the oil content is low enough to be lawful. This guide covers how it works, the MARPOL limits, the components and the alarms.[1][2]

What it treats

The oily water separator is used to treat contaminated water from any compartment in the ship, contaminated water and oily mixtures from bilge spaces, and any accumulated water from bilge tank tops.

The MARPOL limit

Under MARPOL, oily mixture may be discharged only after it has passed through the separation system and the oil-in-water content does not exceed **15 parts per million**, or when the mixture has been processed via an oily water separator meeting MARPOL requirements.

How the parts work

In a **coalescence filter**, remaining oil droplets are collected on the filter's surface, where they increase in size by joining up with other droplets. A **static separator** has three components: an oil content meter, a catch-plate separation chamber, and coalescence filters. A **centrifugal separator** has a centrifuge separator, a motor to spin the centrifuge, and inlet and outlet piping systems. To ensure there is no air in the separation chamber, fresh water or seawater should be added.

When things go wrong

If the oily mixture is contaminated with very large particles, the separator will not function correctly and the oil content meter may not give accurate readings. An alarm may sound when the oil content meter measures an oil-in-water reading of more than **15 parts per million**, or if the flow of oily mixture from the supply tank is reduced.

Shutting down

It is important to shut down the separator when operations are finished, both to ensure the equipment remains fit for purpose and to reduce the likelihood of an environmental incident occurring.

Key facts to remember

- MARPOL discharge limit: oil-in-water ≤ 15 ppm, after processing through a compliant separator.
- Static separator: oil content meter, catch-plate separation chamber, coalescence filters. Centrifugal: centrifuge, motor, inlet/outlet piping.

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- Coalescence: droplets join up and grow until separable.
- Add fresh water or seawater to remove air from the separation chamber.
- Large contaminant particles impair separation and meter accuracy.
- Alarm: >15 ppm reading or reduced flow from the supply tank.
- Shut down after use — keeps equipment fit and avoids environmental incidents.

Sources

1. IMO MARPOL Annex I — Regulations for the prevention of pollution by oil (discharge limits and oily water separator requirements).
2. IMO Resolution MEPC.107(49) — Revised guidelines and specifications for pollution prevention equipment (15 ppm bilge alarms and oil content meters).