

Afloat Oil Water

Separator Systems

Meeting Pollution Prevention Challenges On the High Seas

To comply with the Act to Prevent Pollution from Ships (APPS), U.S. Navy ships are now being equipped with oil/water separators (OWS) that remove oil, fuel and other pollutants from bilge wastewater before discharging it overboard in the open seas. The implementation of this technology for shipboard use is another example of how the Navy is

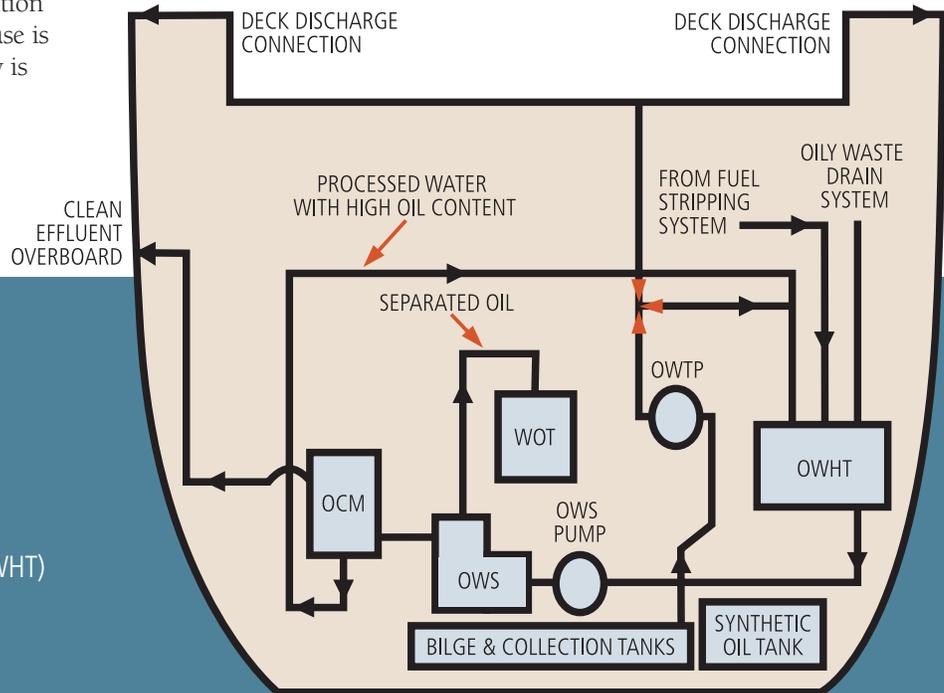
meeting the challenges for pollution prevention on the high seas.

A typical oil/water separator system onboard a U.S. Navy ship operates in the following manner while at sea. The ship's bilge is the collection basin

for a host of waste matter such as wastewater, oil, fuel, and other substances that have to be managed during long deployments. Wastewater contaminated with oil and fuel is a predominant substance found in a ship's bilge. An oil water separator provides an ideal way to reduce the volume of contaminated wastewater by discharging the treated wastewater (of less than 15 parts per million in oil content) overboard.

Oil Pollution ABATEMENT SYSTEM:

- Oil Water Separator (OWS)
- Oil Content Monitor (OCM)
- Oily Waste Transfer System
 - Bilge Pumps
 - Oily Waste Holding Tank (OWHT)
 - Waste Oil Tank (WOT)
- Three Way Diverter Valve



The ship's bilge is the collection basin for a host of waste matter such as wastewater, oil, fuel, and substances that have to be managed during long deployments.



All the bilge wastewater on board a ship passes through a strainer that removes large particles and debris. The strained wastewater is then piped (through a pumping process) into a holding tank, after which the OWS processes bilge and other oily wastewater to produce an effluent suitable for overboard discharge. A differential pressure switch across the strainer would signal when the strainer needs attention. The pump pushes the fluid through the separator tank and then overboard. During the oil removal cycle, the pump pushes the separated oil into the Waste Oil Tank (WOT). The



A typical oil/water separator.

pressures throughout the system are continually monitored on the gauge panel. The flow totalizer in the waste oil line records the amount of oil discharged. System shutdown is automatic in the event of component failure or insufficient quantity of bilge wastewater. Audible and visual alarms are activated whenever automatic shutdown occurs.

The actual overboard discharge is controlled by the Oil Content Monitor (OCM) System. The OCM is designed to operate automatically with minimum operator attention. The system samples effluent water discharged from an OWS and determines the oil content by measuring the increases in turbidity (cloudiness) of the water after it is subjected to ultrasonic emulsification. When the measured oil content exceeds the selected alarm limit (15 ppm), the OCM activates alarm indica-

tors and diverts the overboard discharge to the holding tank. The OCM provides automatic control of the effluent oil concentration discharged from an OWS.

The OWS systems presently used aboard U.S. Navy ships are an example of appropriate use of technology to remove ship waste while respecting the environment. ⚓

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