



RWO

RWO comparison study of
OEM and **non-OEM** filter cartridges
for the OWS-COM oily-water separator

MARINE WATER TECHNOLOGIES

1. Introduction

Under Annex 1 of the International Maritime Organization (IMO)'s International Convention for the Prevention of Pollution from Ships (MARPOL), vessels of 400 gross tonnage and above are required to use water treatment equipment such as an oily water separator (OWS) to ensure effluent levels of discharged water do not exceed 15 parts per million. Additionally, an effluent limit of 5 ppm is stipulated in specific classification societies' notations.

OWS systems must be tested and installed in line with the IMO's Marine Environment Protection Committee resolution MEPC 107(49). For several original equipment manufacturers (OEM), the OWS operation comprises two stages: the coalescence stage and the filter stage, which relies on active carbon filter cartridges. Filter cartridges for OWS are available from OEM and non-OEM suppliers. The non-OEM parts are frequently cheaper and as a result, many operators with challenging maintenance/OPEX budgets choose the non-OEM option in the belief they are ensuring compliance with a similar-quality product for a lower cost. However, the non-OEM parts which are supposedly offered as equivalent have not been subject to rigorous type approval performance testing.

2. Compliance Issue

OWS systems are certified in accordance with IMO test procedures using filter material developed and chosen by OEMs for maximum safety and performance. Therefore, OEM filter cartridges are considered integral to the certified and type approved product. By choosing non-OEM parts, an operator is not only invalidating the guarantee but also the certification of the OWS leading to a significant compliance issue. Non-compliance caused by using non-OEM spares may result, in certain circumstances, in hefty fines by administrations in the event of a pollution incident.

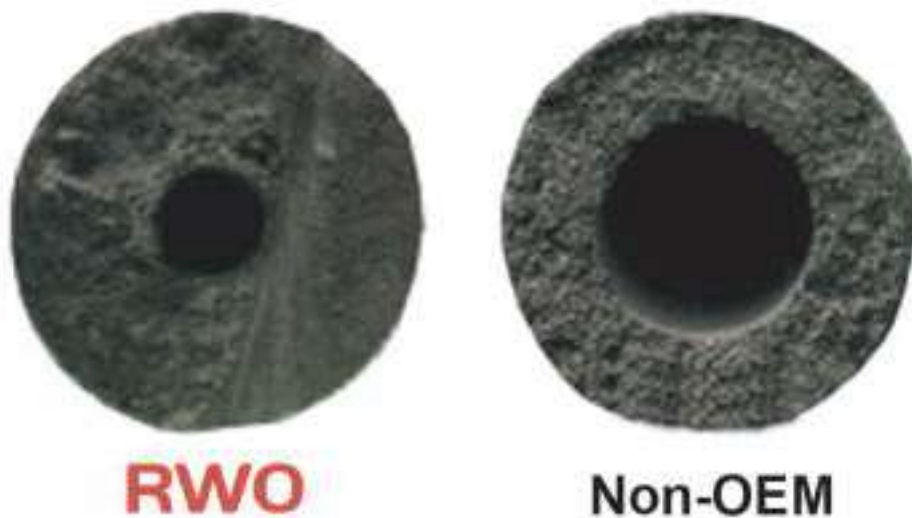
3. Comparison Study

3.1. Visual comparison

At first glance, the non-OEM filter cartridges appear to be manufactured to a comparable level of quality to the OEM product. However, a close visual comparison of the filter cartridges reveals that, beyond superficial similarities such as shape and colour, there are key differences between the OEM and non-OEM versions.

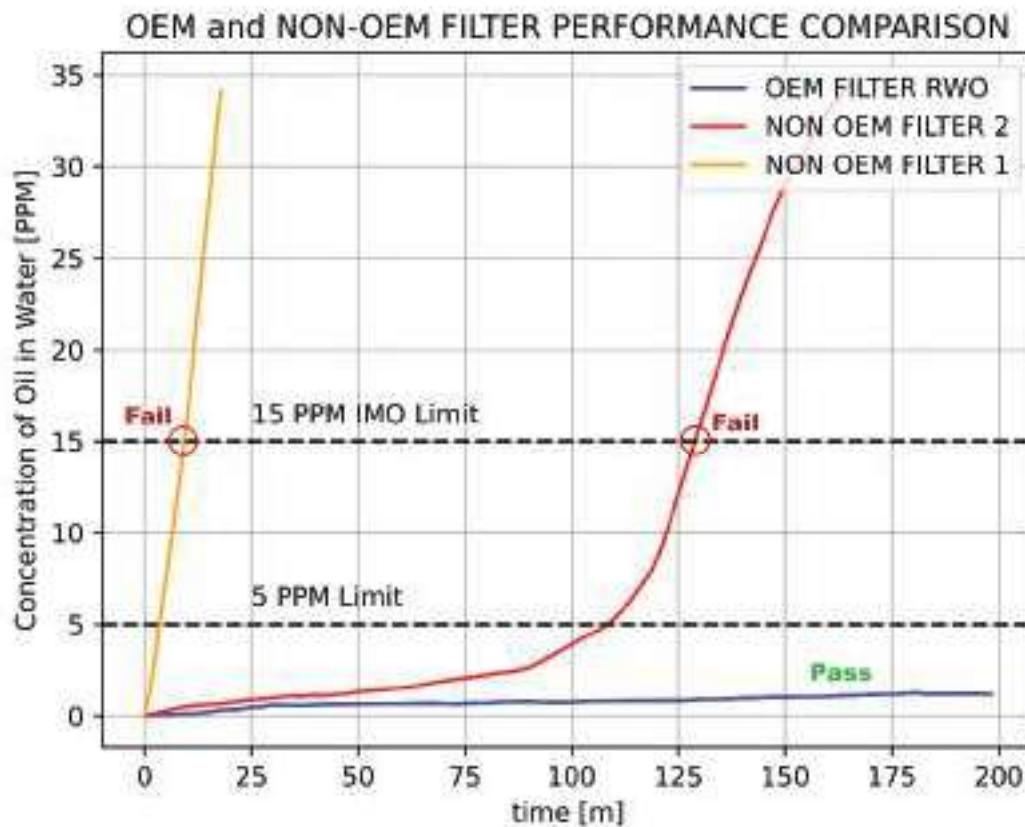
First, OEM cartridges contain more active carbon, which ensures better performance and durability. They are also heavier and more robust, with their smaller pores creating a smoother surface structure which offers superior oil capture.

Sectional view of RWO and non-OEM filter cartridges



3.2 Performance Test

RWO conducted a performance test, comparing its own cartridges with those offered by two non-OEM traders. The tests were carried out under IMO type approval testing regime, with the effluent water analysed by an independent water laboratory to ensure impartiality.



1. Non-OEM filter cartridge 1

With the carbon particles of filter cartridge 1 exhibiting saturation early in the test, the OWS reached the 15-ppm effluent limit within 10 minutes of operation, having exceeded the 5-ppm threshold in just 5 minutes. During testing no significant pressure change was observed at the filter stage. This suggests that the cartridge was not effectively capturing oil and other particles as this would be denoted by a pressure rise in the filter element. If an OWS equipped with cartridge 1 is operated under bilge water conditions indicated in type approval testing, then a vessel operator would need to exchange the filter set more than 15 times to meet RWO filter performance.

2. Non-OEM filter cartridge 2

Filter cartridge 2 initially appeared to be performing adequately. However, the test also failed since effluent levels reached the 15-ppm limit earlier than the time indicated in the type approval procedure. Again, minimal pressure increase at the second stage indicates poor filter performance.

If an OWS equipped with cartridge 2 is operated under bilge water conditions indicated in type approval testing, then a vessel operator would need to exchange the filter set at least twice to meet RWO filter performance.

3. OEM (RWO) filter cartridge

With RWO's filter cartridge, the OWS performed in compliance with IMO conditions while effluent levels remained within the 5-ppm threshold, even for an extended period of time. Pressure gradually rose from 0.7 to 3.0 bar, indicating that the filter was working effectively and only slowly becoming saturated with oil and other particles.

One set of RWO filter cartridge surpasses even the highest standards set.

4. Conclusion

Compliance with the environmental regulations can only be achieved by maintaining the OWS with OEM spares which are an integral part of the certified unit. Any deviation will result in loss of certification for the unit which may in turn lead to hefty fines.

Even if non-OEM spares cost the operator half the price of the OEM, the life-cycle cost of using non-OEM spares may end up being higher due to more frequent replacement, depending on the bilge water composition.

Based on the above findings, RWO recommends that companies purchase genuine spare parts throughout the OWS lifecycle to minimise running costs, labour hours, and downtime; maintain regulatory compliance; and ultimately protect the marine environment.

RWO OEM cartridge filters are available worldwide through the company's sales and service network with fast delivery times. It has been reported that several unauthorized distributors provide non-OEM spares claiming these are original. If you are unsure that you receive original spares, please look for the RWO logo on the cartridges or contact spares@rwo-gmbh.com.