

Oil filtration with sheep wool better than a centrifuge

A six-month trial shows that oil filters from GreenOil improve the daily operation on board two TORM vessels – resulting in lower power consumption, reduced service hours and lower maintenance costs.

A collaboration between GreenOil and TORM A/S has identified several advantages to using oil filters instead of centrifuges to clean lubricating oil in auxiliary engines on board two of TORM's vessels.

»After six months of testing, our experience with using oil filtration instead of centrifugation is very good. GreenOil filters are a very simple and user-friendly solution, ensuring the same quality of oil purification at less than half the annual operating cost of a centrifuge« says Lars Skov Nielsen, chief engineer at TORM.

Some TORM ships were having problems with their turbochargers on the auxiliary engines. This was apparently caused by poor oil quality, which was again caused by insufficient cleaning of the lubricating oil in the centrifuges.



M/T Torm Moselle is one of the Torm vessels equipped with GreenOil filters, cleaning the Lubrication oil instead of existing purifiers.

Consequently, TORM started to examine alternatives to using a centrifuge, and a decision was made to test GreenOil filters. GreenOil filters have now been in operation on board two TORM vessels since January 2014.

Cheaper acquisition and operation

Six oil filters from GreenOil have been installed on board the TORM vessels, three filters on each ship – one filter for each auxiliary engine. This way, the filters are dedicated solutions - as opposed to the centrifuge that clean the lubricating oil from all three auxiliary engines.

Oil filters from GreenOil are designed for very efficient operation and maintenance – using a minimal amount of power in the process. A filter cartridge can be changed in a matter of minutes, without any human contact with the oil. A pressure gauge tells you when the cartridge needs to be replaced - at a pressure of five bar.

»When the filter cartridge needs to be replaced, you just turn off a switch, change the cartridge and press the switch again. The whole process takes only a couple of minutes« says Tomas Skjærris, Sales Manager at GreenOil.

The primary material in the GreenOil filters is sheep wool, and the filtration of unwanted particles in the oil is just as effective as in a centrifuge.

"We do not claim that the GreenOil filtration itself is better than in a centrifuge, but the acquisition cost as well as the operating and maintenance costs are lower and therefore worth considering instead of centrifuges" says Tomas Skjærris.

He adds that the power consumption in the oil filters is minimal compared to the centrifuge - just as there is virtually no oil spill when the filter is changed.

»A centrifuge must heat the oil to 90 ° C and use thousands of kilowatt-hours in the process. A GreenOil filter is operated at 245 W for both filtration and water separation« says Tomas Skjærris.

55.000 DKK in annual operating savings

On board the two TORM vessels, the annual operating cost for a centrifuge servicing three auxiliary engines is about 100.000 DKK. In comparison, the annual operating cost for the three oil filters from GreenOil is around 45.000 DKK.

»The payback period for the GreenOil filter is one year. After that, you have an annual gain of 55.000 DKK – for every consecutive year« says Lars Skov Nielsen.



GreenOil WP1-B1-100 is installed on each of the 3 Aux. Engines, keeping the oil clean with operational and economic benefits.

Technically, centrifuges are more demanding than oil filters - and more time consuming. In addition, the centrifuge has a large oil consumption.

»Operating a centrifuge put special demands on the crew, for example, when the flow or temperature needs to be changed. In some cases, you have to take the centrifuge apart to change the settings. For the crew, it can be both technically demanding and time-consuming to keep the centrifuges running optimally. With filters from GreenOil, this is not an issue. Crews can easily install the filters, and you just need to keep an eye on the filter pressure. The replacement of the filter cartridge is quick and easy and does not require any special technical knowledge. Everybody on board can do it« says Lars Skov Nielsen.

Technology and design make the centrifuge a more demanding task for the crew.

»A centrifuge is only as good as the crew who operate it. If the operation of the centrifuge is not optimal, you do not get the necessary purification of the oil. This was evident in the oil samples we received from some of our ships. The centrifuges did not have enough operating hours, and the settings were not optimal in relation to flow, temperature and pressure, which can be a demanding task. Some crews stop the centrifuges at the end of the day, so they do not get alarms at night. Some crews stop them to save power. Overall, this will cause the oil quality to decline, and this again requires more frequent oil changes than with a better operation of the centrifuge. The additional cost for extra oil is an important part of the calculation when you compare operating costs between a centrifuge and oil filters« says Lars Skov Nielsen.

Benefits from GreenOil filtration:

- Low energy consumption
- Easy installation - carried out by the crew itself
- Water separation - patented solution that removes 250 milliliters of water per day
- Filter cartridge change in 1-2 minutes - without oil spillage and without physical contact with the oil
- Stainless steel design with low maintenance costs

TORM and GreenOil collaboration

- GreenOil filters tested on board Torm Moselle and Torm Rosetta since January 2014
- Three auxiliary engines per ship: Daihatsu 5GB-20 522 kW / 720 rpm
- One GreenOil filter per auxiliary engine
- GreenOil filter unit: WP1-B1-100
- Oil circulation, capacity: 150 l / h (60 Hz)
- Power consumption: 245W
- The GreenOil filter cartridge consists primarily of sheep wool
- All filter units are designed and manufactured by GreenOil in Ebeltoft, Denmark