Engine Lube Oil

4-Stroke Main Engine, Dual-Fuel Engine WÄRTSILA 6L20DF (1,056 kW), Ferry

Customer Case

CUSTOMER SAVINGS & BENEFITS:

Installing a CJC® Oil Filter solution on the oil sump of the main diesel and gas engine, which is operated with dual fuel and MGO/LNG, resulted in the below benefits for our customer:

- Decreased environmental impact
- Less sludge creation compared to centrifuge
- Decreased lube oil consumption
- Expected component lifetime extension by a factor of 3–5

CUSTOMER

Samsø Rederi, Hou-Sælvig, Denmark, Ferry M/F „PRINSESSE ISABELLA“

SYSTEM

Main engine: 4-stroke diesel and gas engine Wärtsilä 6L20DF (1056 kW)
Engine lube oil: 375 Litres Texaco HDAX 5200
Fuel: MGO, LNG, Dual-Fuel

CHALLENGE

M/F „PRINSESSE ISABELLA“ was experiencing dirty and black lube oil for the main engines. Whenever the oil volume was replaced with new oil, its colour changed from almost golden to black in 8 hours. The previous oil filtration/cleaning method consisted of automatic inline filters, replacement of the lube oil and, in case of water contamination in the lube oil, a centrifugal separator. The existing centrifugal separator was time-consuming, expensive to operate and impractical to use due to a sludge tank of only 1m³. Frequent sludge disposal was required when operating the centrifugal separator. The chief engineer did not have the time to maintain the centrifugal separator, as the task required a full working day, and only one person was on board the vessel responsible for the engine room. The chief engineer wished to install an oil filter in order to prevent wear on engine components created from dirt and particles.

ENVIRONMENTAL FOCUS

Furthermore, Samsø Rederi is managed by the commune of Samsø, which is currently 100% CO_2 neutral. Due to this, M/F „PRINSESSE ISABELLA“ has a big focus on having a minimal environmental impact. The vessel has been designed to generate as little pollution as possible, and further improvements are always investigated. Prior to the installation of the CJC® Lube Oil Filter, there has been a great interest in extending the lifetime of the lube oil so that both the cost of operation and environmental impact are decreased.

SOLUTION

The centrifugal separator was replaced with a CJC® Marine Lube Oil Filter 27/81. The integrated CJC® Depth Filter Insert consisting of 100 % natural fibres, removes particles, water, oil degradation products and acids from the oil (filtration degree: 3 µm absolute, 1 µm nominal).

TEST

For a test period of two months, oil samples were taken regularly at the sample point of the CJC® Lube Oil Filter (upstream). The oil samples were taken at an interval of one sample every 1–2 weeks.

RESULT

Installing the CJC® Oil Filter meant that the overall quality of the lube oil was improved. Within 6 days, oil cleanliness improved from ISO code 20/16 to 18/15 and in 1.5 months to ISO 17/12 (acc. ISO 4407). Furthermore, it was recorded that the general trend for wear elements present in the oil was starting to de-crease. According to Noria Corporation, in theory, this will give a lifetime exten-sion factor between 3–5 on engine components. In addition to this, it is expected that the improved lube oil quality will extend the oil lifetime, thus lowering the engine lube oil consumption and ultimately lowering the environmental impact of the vessel.

Ferry M/F „PRINSESSE ISABELLA“

A happy crew next to the CJC® Lube Oil Filter, which replaced a Centrifuge Separator

Christian Damhøj Jensen, Chief Engineer:
„You can clearly see the difference between before and after installing the CJC® Oil Filter as the colour of the oil would still be a bit golden. The primary challenge with the centrifuge is that it produces a lot of sludge, whereas 90–95 % of it is water. But it costs an arm and a leg to get rid of the sludge – the centrifuge is expensive to operate.“

RESULT

Crankcase of the main engine ***BEFORE***

Crankcase of the main engine ***with CJC® Lube Oil Filtration***

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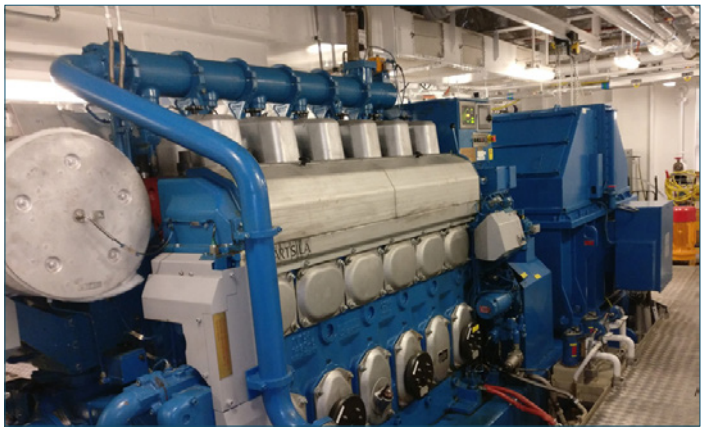
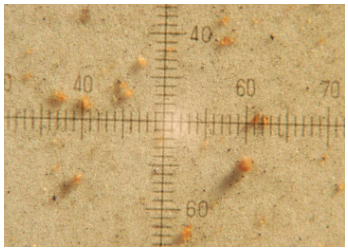
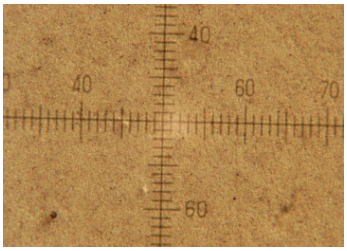
Customer Case



CJC® Oil Filter installed on the Wärtsila Main Engine, MGO/LNG, Dual-Fuel



Membrane from Labo. Report
BEFORE

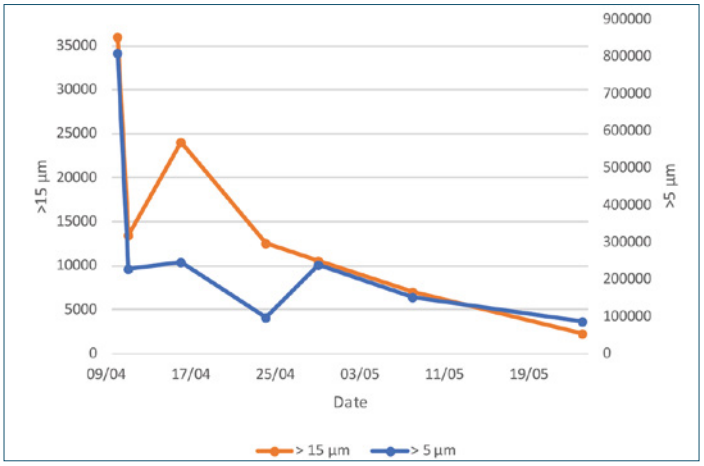


Membrane from Labo. Report
with CJC® Lube Oil Filter

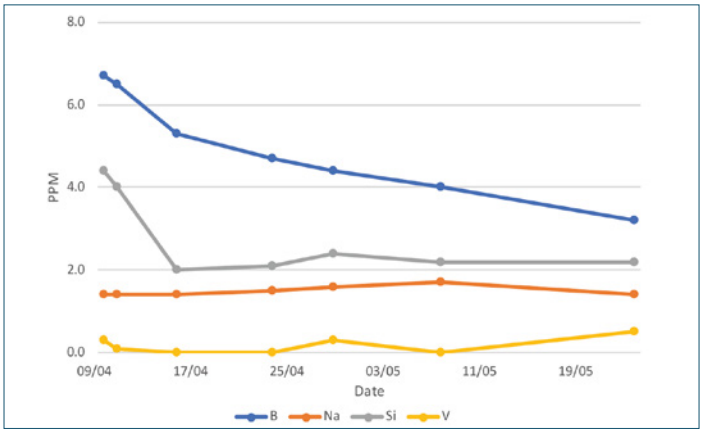
	Before	After 6 days	After 1,5 months
		with CJC® Lube Oil Filter	
Particles > 5 µm	808,480	246,530	87,840
Particles > 15 µm	36,010	24,020	2,330
ISO Code *)	20/16	18/15	17/12

Laboratory report from Filtrex Services, particles in 100 ml lube oil
**) Information on the determination of cleanliness classes available on request.*

PARTICLE CONTENT IN L.O.



CONTAMINANTS IN L.O.



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