Engine Lube Oil

Main Diesel & Gas Engine, Dual Fuel, MGO/LNG, Passenger Vessel

CJC™ Application Study

Application Study written by:

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C.C.JENSEN A/S

Installation year:
2018

CUSTOMER SAVINGS & BENEFITS

Installing a CJC® Oil Filter solution on the engine lube oil sump tank on a main diesel & gas engine, dual fuel, MGO/LNG resulted in below benefits for our customer:

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

CUSTOMER

Samsø Rederi, **M/F Prinsesse Isabella,** Hou-Sælvig, Denmark

SYSTEM

System: Engine lube oil, Wärtsilä 6L20DF, 1056 kW 4-stroke engine, crank case
Oil type: Texaco HDAX 5200
Fuel type: MGO / LNG
Oil volume: 375 L
CJC™ installation: 09-04-2018

PROBLEM

M/F Prinsesse Isabella was experiencing dirty and black lube oil for the main engines. Whenever the oil volume was replaced with new oil, the oil would change color 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 a Centrifugal Separator that was only used, when there was water contamination in the lube oil. 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 there was only one person onboard the vessel responsible of 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 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® 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 is decreased.

SOLUTION

The Centrifugal Separator was replaced with a **CJC™ Fine Filter, HDU 27/81 PV-L1VZ** *(CJC™ Marine Engine Lube Oil Filter)* consisting of 3 CJC® A 27/27 Filter Inserts, each with a dirt holding capacity of 4 liters and a filtration degree of 98,7 % of all solid particles $>$ 3 μm and 50 % of all solid particles $>$ 0,8 μm.

TEST

For a two-month period, oil samples were taken on a regular basis at the sample point of the CJC® Oil Filter. The oil samples were taken with 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. After approx. 2 months, the ISO code acc. 4402 went from 20/16 to ISO 17/12. Furthermore, it was recorded that the general trend for wear elements present in the oil was starting to decrease. According to Noria Corporation, in theory, this will give a lifetime extension 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.

The passenger vessel, M/F Prinsesse Isabella

A happy crew & the CJC® Oil Filter, which replaced a Centrifuge Separator

COMMENTS

Mr. 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"

RESULTS

The crank case on the main lube oil engine ***BEFORE*** *CJC® Oil Filtration*

The crank case on the main lube oil engine ***AFTER*** *CJC® Oil Filtration*

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For documentation, please see page 2 ►

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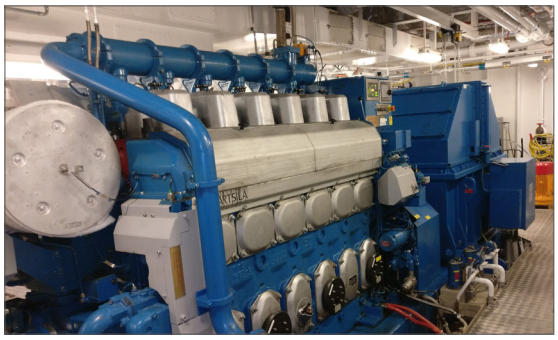
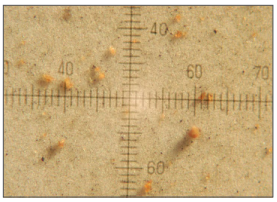
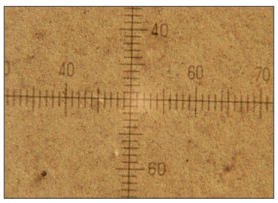


CJC® Oil Filter installed on the Wärtsila Main Engine, MGO/LNG



Membrane from Labo. Report
BEFORE
CJC® Oil Filtration

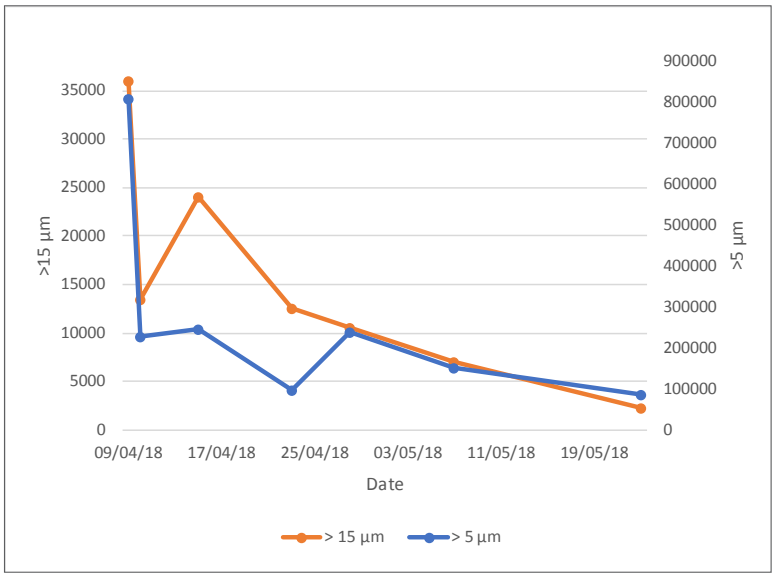


Membrane from Labo. Report
AFTER
CJC® Oil Filtration

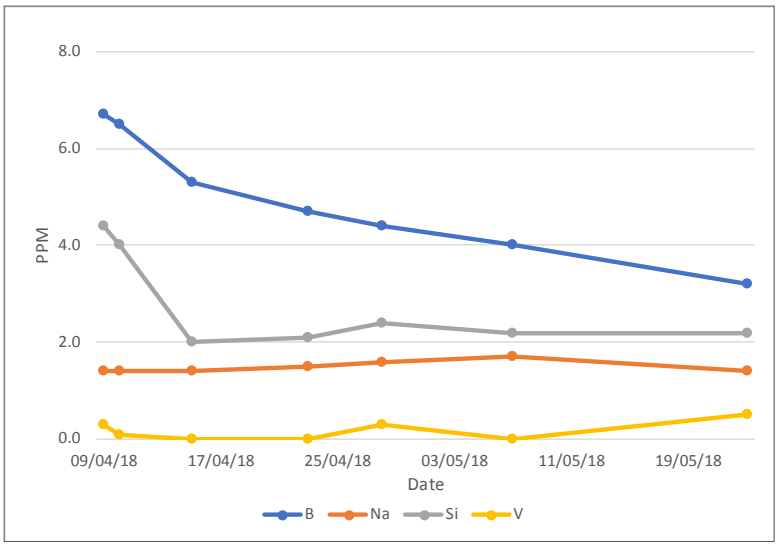
	BEFORE CJC® Oil Filter 09.04.2018	After 6 days 15.04.2018	After 1.5 month 23.05.2018
Particles > 5 µm	808,480	246,530	87,840
Particles > 15 µm	36,010	24,020	2,330
ISO Code	20/16	18/15	17/12

Filtrex Services, Laboratory Report, pr. 100 ml.

PARTICLE DEVELOPMENT IN L.O.



CONTAMINANTS IN L.O.



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ASMA7034-UK
Passenger Vessel
Engine 4-stroke lube
14.11.2018

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