CJC™ Oil Care is a Must for Green Shipping

Application Study | Lube Oil Care for 4-Stroke Diesel Engines

Supply Vessel
Engines type BERGEN, 2,500 kW

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Application Study

Separator vs. CJC™ Oil Care System – comparison field test

Engines

Vessel: Supply vessel
Engines: Bergen, 2,500 kW/750 rpm (2 pieces)
Lube oil: SHELL GADINIA AL 40

Test: Separator vs CJC™ Oil Care System

Test period: > 10.000 Running hours (RHs)

Conventional lube oil conditioning:
One separator for each engine.
Flow capability: 550–810 l/h

Newly installed CJC™ Oil Care System:
During the test period, a CJC™ Oil Care System 27/108 for continuous fine filtration and drying (24/7/365) was installed at one of the engines (ME 2). The automatic temperature controlled flow ensures optimum operation and the highest filtration efficiency.
Pump flow: 1,150 L/h (0.3 L/kW), nominal

Installed CJC™ Oil Care System 27/108

	Engine ME 1 with separator	Engine ME 2 with CJC™
Start of test	143.447 RHs	144.992 RHs
End of test	153.879 RHs	155.123 RHs
Test period	10.432 RHs	10.131 RHs

Result

97.5 % LOWER ENERGY CONSUMPTION ≈ 229,774 KW/YEAR AND SEPARATOR

ME 1 with separator - energy consumption ≈ 235,468.8 kW *(26.88 kW for operation + preheater)*
ME 2 with CJC™ - energy consumption ≈ 5,694 kW *(0.65 kW for operation)*

97,8 % LOWER CO_2 EMISSIONS ≈ 159,649 KG/YEAR AND SEPARATOR

Combustion of fuel and thermal disposal of waste oil/sludge cause approx. 2.6 kg CO_2 per litre.

Lower energy consumption:

ME 1 with separator ≈ 143,246 kg CO_2 *
ME 2 with CJC™ ≈ 3,463 kg CO_2*

** Based on consumption of approx. 187 g fuel/kWh.*

Lower amount of sludge to be disposed of:

ME 1 with separator ≈ 19,929 kg CO_2 *
ME 2 with CJC™ ≈ 62.4 kg CO_2

99,7 % LESS SLUDGE ≈ 7,641 L/YEAR AND SEPARATOR

ME 1 with separator - discharge of sludge ≈ 7,655 litres
ME 2 with CJC™ - filter replacement ≈ 24 litres

60 % LESS TIME FOR MAINTENANCE ≈ 12 H/YEAR AND SEPARATOR

ME 1 with separator - Ø time for maintenance ≈ 20 hours
ME 2 with CJC™ - Ø time for maintenance ≈ 8 hours

60 % LOWER LUBE OIL CONSUMPTION ≈ 8,940 L/YEAR AND SEPARATOR

ME 1 with separator - sludge and engine ≈ 14,900 litres
ME 2 with CJC™ - filter replacement and engine ≈ 5,960 litres

Specific lube oil consumption (SLOC) at maximal continuous rate (MCR)		
	Engine ME 1	Engine ME 2
$SLOC_{MCR}$ [g/kWh]	0,71	0,29

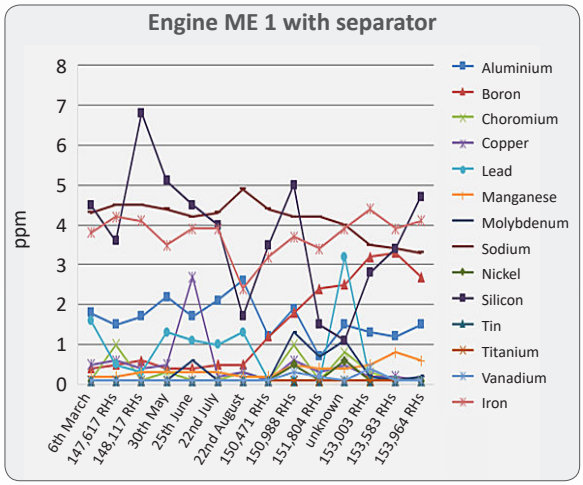
86.25 % LOWER OPERATING COSTS (OPEX) ≈ 30,199 EUR/YEAR AND SEPARATOR

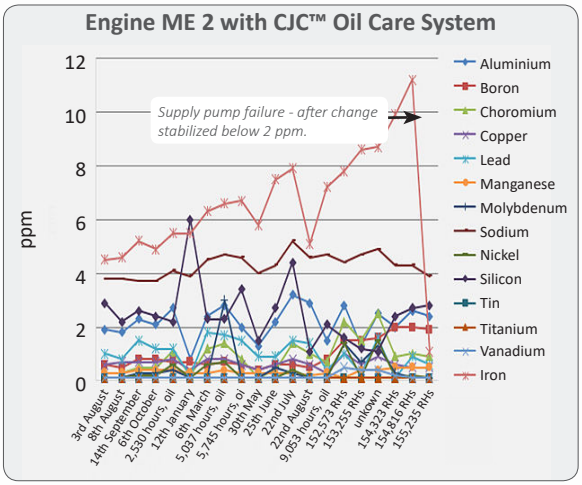
OPEX/year (359 days operation, approx. 8,616 hours/year)	Separator	CJC™ Oil Care System
Oil costs [1.97 EUR/L]	15,090,-	48,-
Energy costs [0.08 EUR/kWh]	18,535,-	465,-
Disposal costs [0.12 EUR/l]; *sludge, filter inserts*	950,-	120,-
Maintenance costs	440,-	4,183,-
Total operating costs	35,015,-	4,816,-
Total savings	**30,199,- EUR**	

Application Study

Separator vs. CJC™ Oil Care System – comparison field test

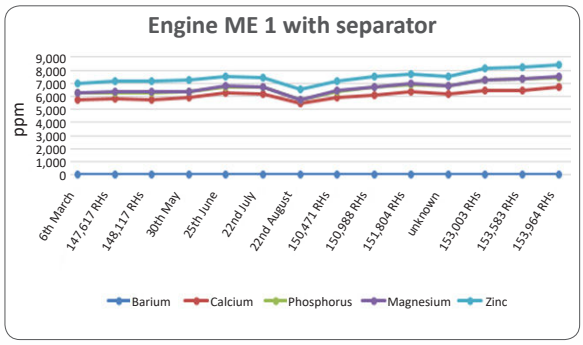
Oil analyses of > 10,000 RHs - CJC™ Oil Care System vs. separator

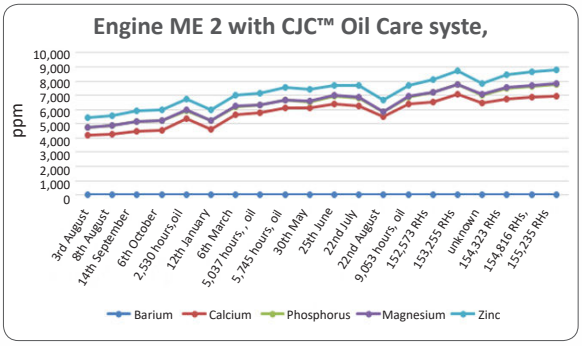




WEAR ELELMENTS AND SILICON (DUST)

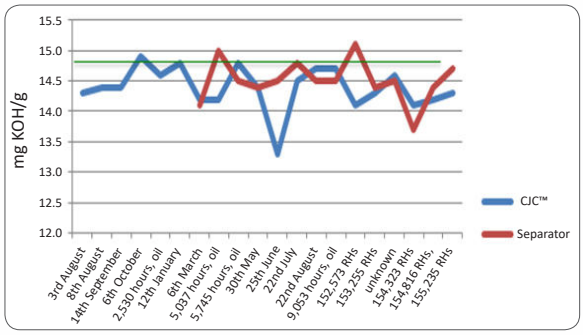
Based on all spectral analyses both engine data conducted is reviewed as being normal.





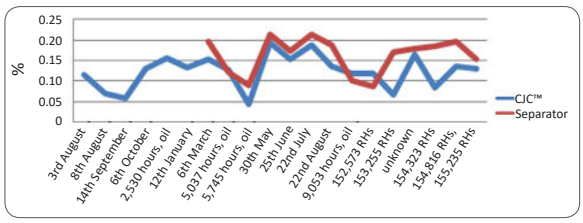
ADDITIVES

None of the two engines reveal an abnormal reduction in additive levels. Oils are fit for further use!



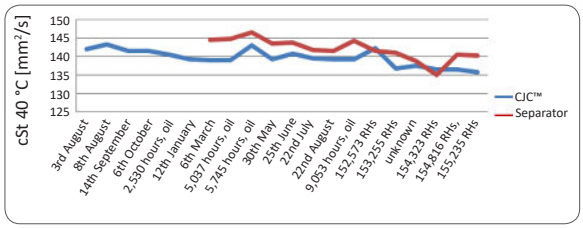
TBN (TOTAL BASE NUMBER)

Despite the significantly lower oil consumption with CJC™ Oil Care Systems, no new oil is needed for the additional topping as compensation of the base number.



WATER

The Water content of the lube oils are kept below limits of CIMAC recommendations *(international council on combustion engines).*



VISCOSITY

Viscosity levels of the lube oils in both engines are kept stable throughout the testing period.

Oil Cleanliness classes according to ISO		
	CJC™ Oil Maintenance	Separator
6th March	17/11	17/13
147,617 RHs	18/12	18/14
148,117 RHs	16/12	17/13
30th May	18/12	19/13
25th June	17/12	18/13
22nd July	16/11	17/11
22nd August	17/10	18/11
150,471 RHs	19/10	17/11
151,804 RHs	19/10	17/11
unknown	17/11	19/13
153,003 RHs	18/12	18/11
153,583 RHs	18/11	18/12
153,964 RHs	18/11	18/11

PARTICLES

Oil contamination levels in both engines ME1 and ME2 are valued as good. Also, the results of the gravimetric analyses for determining the weight of contaminants in g/l are nearly identical.

- worldwide

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History

Founded in 1928 and located in Hamburg, we develop and manufacture CJC™ Fine Filter technology since 1951. With substantial know-how and in-house analysis and test facilities we are experts when it comes to the maintenance of oils and fuels.

Quality

Competent advice and individual solutions, even for the most difficult filtration problems of our customers - that is our daily claim. The certification of our company according to DIN EN ISO 9001:2015 provides us with assurance and motivation.

CJC™ worldwide

CJC™ Fine Filter systems are available worldwide through subsidiaries and distributors.
Find your nearest distributor on our website www.cjc.de - or give us a call!