

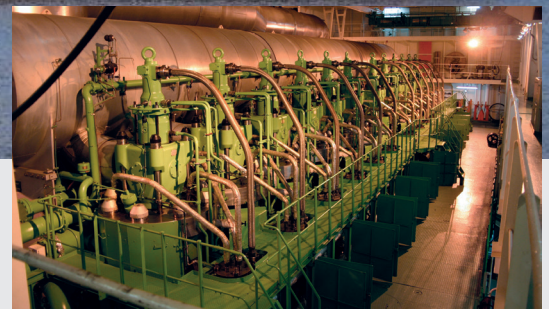


CJC® Oil Care is a Must for Green shipping

Application Study | Lube Oil Care for 2-Stroke Diesel Engine



CMS "HONG KONG EXPRESS", 13,177 TEU and
CMS "HAMBURG EXPRESS", 13,177 TEU
Engines: MAN 11K98ME-C, 58,275 kW



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Application Study

Centrifugal Separator vs. CJC® Oil-Care System – comparison field test

Engine

Vessel: CMS „HONG KONG EXPRESS“, Containerschiff, 13.177 TEU
Engine: MAN 11K98ME-C (58,275 kW, low-speed 2-stroke diesel engine)
Running hours: > 6,000 RHs/year
Lubricating oil: Mobilgard 300, 111 cSt @ 40 °C, circulation lubrication
Oil volume: 70 m³ (1.2 l/kW_{MCR})



CJC® Oil-Care System 3x427/81 and integrated CJC® Fine Filter Insert type LOX

Test: Separator vs. CJC® Oil-Care System

TEST PERIOD:

Period: 45 weeks
Engine running hours: 5,244 RHs during test period
Test start: at approx. 24,556 RHs
Test end: at approx. 29,800 RHs

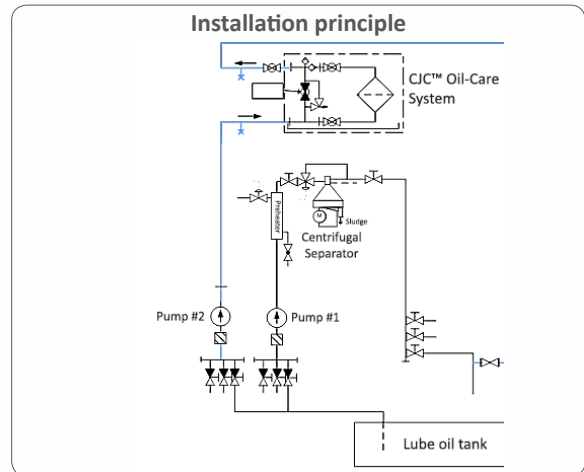
CONVENTIONAL LUBRICATION OIL TREATMENT:

Two centrifugal separators for the main engine.

NEWLY INSTALLED OIL-CARE SYSTEM:

CJC® Oil-Care System 3x427/108 for continuous fine filtration and dewatering (24/7/365) was installed. The both centrifugal separators weren't in operation throughout the test period.

Pump flow: 3,000 L/h
Filter material: 100 % renewable raw materials (cellulose)
Filtration degree: 3 down to 1 µm
Dirt holding capacity: approx. 72 kg
Water holding capacity: approx. 32.4 l



The Result – CJC® Oil-Care



APPROVAL FROM MAN ENERGY SOLUTIONS

No Objection Letter for CJC® Lubricating Oil System for 2-Stroke Engines: All Types and Fluids

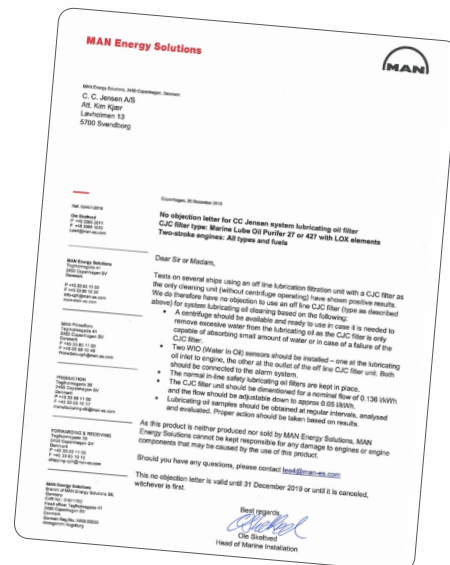
„Test on several ships using an offline lubrication filtration unit with a CJC® Filter as the only cleaning unit (without centrifugal operating) have shown positive results [...]“

The weekly oil samples were examined by several independent oil laboratories (Filtrex, AlControl/Synlab). The oil condition has been rated as „normal“ throughout the whole test period:

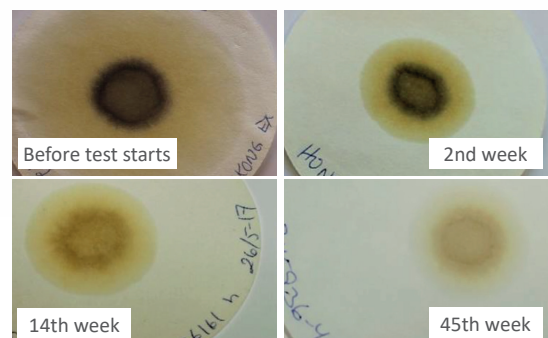
- particle and water content minimized
- stable TBN
- stable viscosity
- no impact on additives

The quick test shows that the lubricating oil was heavily contaminated with dust, metal abrasion and other particles > 1 µm before and at the beginning of the test period. Additionally, oil ageing signs (brown colour), as well as higher water content were detected (serrated border zone). Thermal load on so-called hot spots (e. g. bearings) and particles from component wear (copper, iron, aluminium) accelerate the degradation of the base oil as well as of the additives and thus oil ageing processes. No fuel contamination was detected.

The efficient oil care with CJC® – not only particles and free water, but also water dissolved in the oil, as well as oil ageing products and acid compounds are continuously and permanently removed – has significantly improved the oil cleanliness throughout the test period (see pictures right side).



Quick test: oil and engine condition



Application Study

Centrifugal Separator vs. CJC® Oil-Care Sysem – comparison field test



The result – Savings regarding CO₂, as well as operating and energy costs

>> 96.5 % LOWER LUBE OI LOSSES ≈ 8,870 L/YEAR

Because of the CJC® Oil-Care System, Hapag-Lloyd saved 8,870 litres of lubricating oil a year solely due to the lower lube oil losses:

Oil losses due to discharges (centrifugal separator): 10,000 litres/year

Oil losses due to filter insert replacement (CJC® Oil-Care System): 144 litres/year

>> 96.2 % LOWER ENERGY CONSUMPTION ≈ 202,775 KWH/YEAR

Using the CJC® Oil-Care System drastically reduces energy consumption:

Centrifugal separator: 210,764 kWh/year (incl. preheater)

CJC® Oil-Care System: 8,009 kWh/year



>> 96.6 % LESS CO₂ ≈ 146,795 KG/YEAR

The extreme discrepancy of both systems concerning energy requirements and oil losses enables Hapag Lloyd to significantly improve the CO₂-footprint of the CMS „HONG KONG EXPRESS“ when using a CJC® Oil-Care System.

The combustion of diesel and the thermal disposal of waste oil/sludge causes approx. 2.6 kg of CO₂ per 1 litre.

Lower energy consumption:

Centrifugal separator: 125,954 kg CO₂/year

CJC® Oil-Care System: 4,784 kg CO₂/year

Lower quantities of sludge to be disposed of

Centrifugal separator: 26,000 kg CO₂/year

CJC® Oil-Care System: 374 kg CO₂/year

* Based on specific consumption of approx. 230 g diesel/kWh

>> SHORT PAYBACK TIME ≈ 7 UP TO 21 MONTHS

Due to the enormous savings potential in terms of operating and energy costs as well as due to the lower lube oil losses, the CJC® Oil-Care System amortise within the first both operating years despite the additional installation costs for retrofitting. If CJC® Oil-Care Systems are already be installed on new vessels, the savings will amount to more than 37,000 EUR in the first year of operation – in this case, the payback time will be only 7 months*.

* The CJC® Oil-Care System is particular low-maintenance – no extensive cleaning processes and simple operation without manpower requirements. The personnel costs aren't included in the below-mentioned calculation, only expendable material are listed. **The savings are significantly higher.**

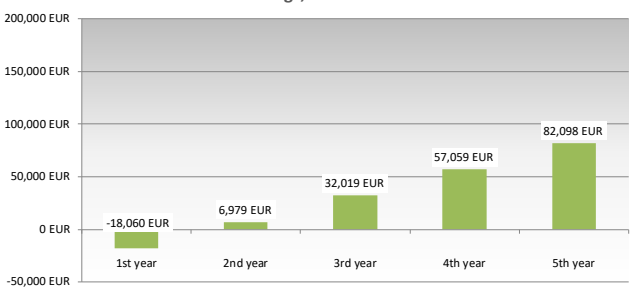
Extract from payback calculation - Retrofit

	Centrifugal separator	CJC® Oil-Care System
Investment and installation		33,000 EUR 10,100 EUR
Energy costs/year		
Operating	8,666 EUR	867 EUR
Preheating	14,151 EUR	–
Oil losses/year	8,800 EUR	127 EUR
Maintenance costs/year *	4,416 EUR	10,000 EUR*
Operating costs 1 st year (incl. installation)	36,033 EUR	54,093 EUR
Costs 1st year	-18,060 EUR	
Operating costs from 2 nd year	36,033 EUR	10,993 EUR
Savings from 2 nd year	25,040 EUR	

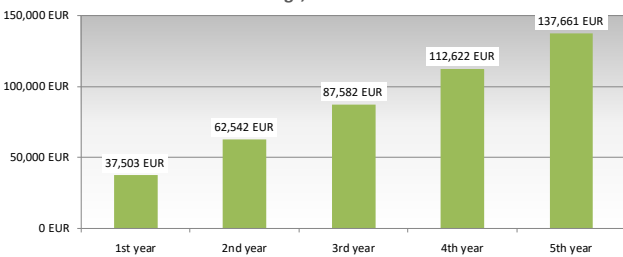
Extract from payback calculation - New vessel

	2 Centrifugal separators	1 CJC® Oil-Care System 1 Separator
Investment and installation	90,926 EUR	78,463 EUR
Energy costs/year		
Operating	17,333 EUR	9,533 EUR
Preheating	28,301 EUR	14,151 EUR
Oil losses/year	17,600 EUR	8,927 EUR
Maintenance costs/year *	8,832 EUR	14,416 EUR*
Operating costs 1 st year (incl. installation)	162,992 EUR	125,489 EUR
Savings 1st year	37,503 EUR	
Operating costs from 2 nd year	72,066 EUR	47,026 EUR
Savings from 2 nd year	25,040 EUR	

Savings, cumulated



Savings, cumulated





- 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.cj.de - or give us a call!

