Gas Engine Oil (GEO)
Combined Heat and Power Plant, CHP - MAN

CJC® Application Study

CUSTOMER
E.ON Danmark A/S, Combined Heat and Power Plant, CHP.

THE SYSTEM
System: MAN 2842
Gas Engine, 300 kWe
Oil type: Mobil Pegasus 710
Oil volume: 60 litres
Fuel: Natural Gas
Engine hours: approx. 56,000 hours

THE PROBLEM
Short oil change intervals, approx. 450–550 hours. The oil was condemned due to too high viscosity, TAN, oxidation, nitration and i-pH.

THE SOLUTION
CJC® Lube Oil Filter 27/27-27/27 was installed. The filter has two filter housings: in the first filtration stage particles, soot, oxidation residues and water are removed. In the second stage acids are neutralized.

Dirt holding capacity: approx. 2 kg
Water absorption capacity: approx. 1,2 L

The filter inlet is connected diagonally arranged directly at the oil sump, and the filter outlet is connected higher up – as far away as possible from the filter inlet. The pump unit of the filter enables an independent circuit for the continuous filtration and care of the gas engine oil (24/7).

THE TEST
The First Test
CJC®Lube Oil Filter extended the oil lifetime to **1,640 hours which is approx. 3.5 times normal oil life time.**

The Second Test
Both inserts are bypassed. Spring guides have been removed. This test will simulate the extra oil volume and is meant to show how many hours the extra oil volume will extend the oil lifetime.
The second test run with extended oil volume lead to an oil lifetime of **1,236 hours which is approx. 2.5 times normal oil life time.**

The Third Test
A run with CJC® Lube Oil Filter (used inserts are replaced with new inserts) extrend the oil lifetime to **2,275 hours which is approx. 4.5 times normal oil life time.**
Only oxidation count was exceeded. All other parameters remained within limits.

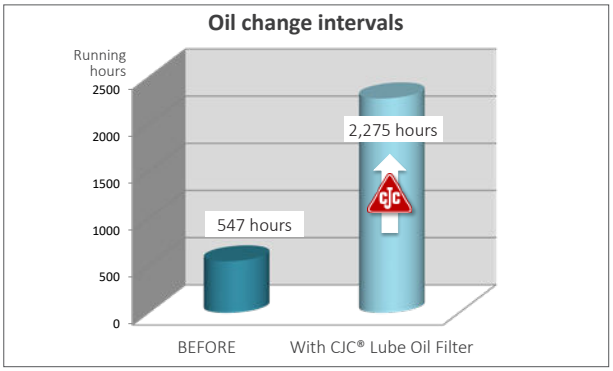
E.ON Danmark A/S, MAN Gas Engine and the CJC® Fluid Treatment unit 27/27-27/27

THE RESULT

	BEFORE CJC®	Test No. 1 with CJC®	Test No. 2 with extra oil volume	Test No. 3 with CJC®
Oil life time, hours	547	1,640	1,236	2,275
Viscosity 40°C cSt *)	167	168	165	161
TAN mg KOH/g	5.08	3.02	4.44	4.20
Oxidation **) abs/cm	27	26	26	29
Nitration abs/cm	27	8	10	10
IpH	4.40	5.79	4.95	5.37

*) *ISO VG for new oil: 128 cSt*

**) *Normal condemning limit is 25. Condemning level of 30 was agreed with Mobil Oil.*



The oil samples were analysed by Spectro Oil in the United Kingdom. They have analysed the Gas Engine Oil (GEO) from Mobil Oil Danmark A/S since 1997. Analysis reports are available upon request.

SAVINGS PER YEAR
Only due to the prolonged oil change intervals *(8,000 running hours per year)*:
- approx. 667 litres engine oil

≈ 1.919 EUR
≈ 1.733 kg CO_2*

** The thermal disposal of waste oil causes CO_2 emissions – approx. 2.6 kg CO_2 per 1 litre of oil.*

Protect resources and reduce emissions:
- less new oil
- less waste oil and CO_2

CO_2
≈ 2.6 kg per 1 litre of oil

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Power Plants
Gas Engines
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