



CLEAN OIL
BRIGHT IDEAS

Application Study
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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 kW_e
Oil type: Mobil Pegasus 710
Oil volume: 60 L
Fuel: Natural Gas
Engine hours: Appr. 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 IpH.

THE SOLUTION

CJC™ Fine Filters 2 x HDU 27/27 PV-E1PTV with one CJC™ Filter Insert EL 27/27 and one A 27/27 with a filtration degree of 3 µm absolute and a flow of 30 L/h were installed.

The CJC™ Ion Exchange Inserts EL (Amberlyst) are used for neutralising acidic compounds in fluids, e.g. gas engine oils, in order to keep the oil analysis parameters within limits.

THE TEST

The filter is connected to the sump of the engine with inlet connection at the bottom of the sump and the outlet at a higher point as far away as possible from the inlet connection.

The First Test

CJC™ Off-line Filter gave an oil life of **1,640 hours** which is approx. **3.5 times normal oil life time**.

The Second Test

The EL insert was replaced by an A insert. 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 life.

The second test run with extended oil volume gave an oil life of **1,236 hours** which is approx. **2.5 times normal oil life time**.

The Third Test

A run with CJC™ Off-line Filter (with one EL and one A Insert) gave an oil life of **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™ Fine Filters 2 x HDU 27/27 PV

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	1640	1236	2275
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.

OIL SAMPLES

The oil samples were analysed by Spectro Oil in the United Kingdom. They have analysed the Gas Engine Oil (GEO) from Mobil Oil Denmark A/S since 1997.

Analysis reports are available upon request.