Case Study

premium lubricants Dex

# GENERATOR SET

**Customer**
Bais Beheer BV
Johan Bais, Den Helder, the Netherlands

Study commissioned by customer and conducted by independent consultancy firm ORM advies.

**The system**
Caterpillar G3306 generator set, on fishing vessel HD-30.

**The problem**
According to oil analysis, the engine oil has to be changed every 250 hours and 1.6 liter has to be refilled every day.

**The solution**
By applying Dex DP1 10W40, the oil no longer requires changing, and a daily refill of 1 litre has proved sufficient. The engine runs more smoothly and produces considerably less smoke. After 1000 hours a CC Jensen filter HDU 15/25 was installed to collect insoluble dirt. Analysis has shown that the oil was still in excellent condition after 1,900 hours. Based on the last 3 oil checks we concluded that provided there is no fuel contamination, a possible 'filled for life' situation had been attained.

**The savings**
The reduced daily refill constitutes savings of 37.5%. The fact that the oil has not had to be changed for 1,900 hours represents considerable extra savings, which look set to rise as the oil may not require changing at all. It is also plausible to expect further savings on fuel consumption, although this was not measured during this study.


| | |
|---|---|
| **Date:** | 26.03.2018 |
| **Reportnumber:** | AR1803259 |
| **Lab.nr.:** | 03.259 |
| **Check:** | S / S / S |
| **Customer:** | ORM/ Fa. Ellen en Zn. |
| **Reference:** | ORM Advies - P. de Caluwe<br>OR18-0028 / Johan Bais Beheer BV |

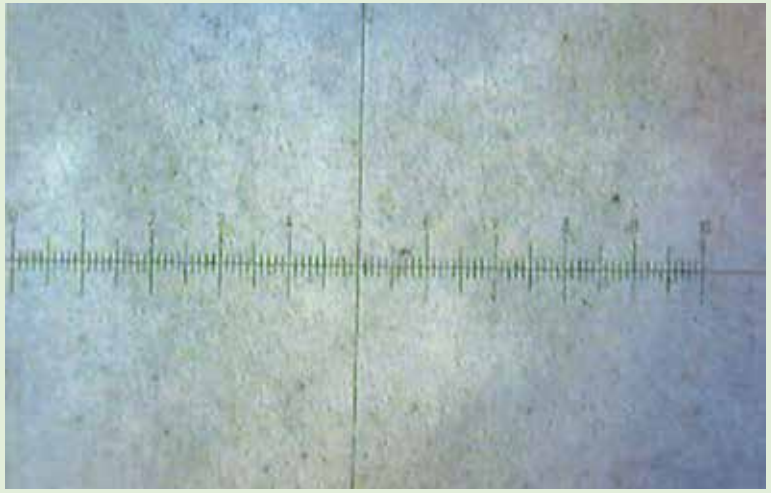
| | |
|---|---|
| **Engine model:** | CATERPILLAR 3306 |
| **Engine manufacturer:** | BAIS BEHEER BV / SB AUXILIARY ENGINE HD-30 |
| **Operating hours:** | 40565 |
| **Type of oil:** | Dex OIL 10W-40 / 36 Ltr |
| **Number of operating hours since last oil change:** | Approx. 1900 / After last sample 800 hrs (Last 900 hours with HDU 15/25) |
| **Sampling date:** | 12.03.2018 |
| **Sampling location:** | WITH CRANKCASE PUMP |
| **Filtration:** | HDU 15/25 |

| OIL CONDITION | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **AR-no.** | **Date Sample** | **ISO 4406 1999 4,6,14 Micron** | **SAE AS 4059** | **Dispersing power %** | **Soot %** | **Visc 100°C ASTM D 445 cSt** | **TBN ASTM D 664 mgKOH/g Norm** | **Flashpoint °C** | **Water ASTM D 6304 METHOD C ppm** |
| AR1711374 | 10.11.17 | >24/20 | >12 | -- | 0.08 | 13.76 | 12.93 | >190 | 229 |
| AR1711375 | 10.11.17 | >26/22 | >12 | -- | 0.11 | 13.62 | 11.97 | >190 | 164 |
| AR1712592 | 22.12.17 | >25/21 | >12 | -- | 0.15 | 14.05 | 12.04 | >190 | 182 |
| AR1802036 | 02.02.18 | >25/21 | >12 | -- | 0.18 | 14.14 | 11.70 | >190 | 164 |
| AR1803259 | 12.03.18 | >24/20 | >12 | -- | 0.19 | 14.31 | 11.50 | >190 | 73 |

| ICP (ATOMIC EMISSION METHOD) | | | | | | | | WEAR ELEMENTS (ppm) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **AR-no.** | **Na** | **B** | **Zn** | **P** | **Ca** | **Mg** | **S** | **Si** | **Fe** | **Cr** | **Mo** | **Al** | **Cu** | **Pb** | **Sn** |
| AR1711374 | 0 | 143 | 954 | 878 | 1409 | 1039 | 4857 | 6 | 1 | 0 | 54 | 0 | 0 | 0 | 0 |
| AR1711375 | 0 | 121 | 1051 | 908 | 1531 | 1063 | 3999 | 3 | 4 | 0 | 59 | 0 | 0 | 0 | 0 |
| AR1712592 | 1 | 104 | 977 | 816 | 1444 | 1019 | 4134 | 2 | 10 | 0 | 57 | 1 | 2 | 0 | 0 |
| AR1802036 | 2 | 83 | 1025 | 850 | 1508 | 1061 | 4094 | 3 | 13 | 0 | 56 | 1 | 10 | 0 | 0 |
| AR1803259 | 5 | 104 | 1050 | 832 | 1566 | 1061 | 4342 | 3 | 16 | 0 | 60 | 2 | 35 | 0 | 0 |

**Oil is slightly contaminated. Slight wear on iron and copper.**
**Further chemical analysis is within specifications. Await next sample.**

| Normal | Caution | Serious |
|---|---|---|



• Membrane 5 micron • Volume 100 ml • Magnification: 40 x • 1 div. = 10 micrometer

**AR1803259**
**Memb: 5.0 micron**
**Name: ORM**

| Value in micron | Average of all counts converted to particles in 100 ml oil |
|---|---|
| >4 | N.A. |
| >6 | N.A. |
| >14 | N.A. |
| >21 | N.A. |
| >38 | N.A. |
| >70 | N.A. |