# CASE STUDY

CUSTOMER
KENWORTH

LOCATION
AB, CANADA / 2002-2014

EQUIPMENT
KENWORTH TRUCK, CAT 3406 475 HP ENGINE

APPLICATION
ENGINE OIL, FUEL

PROVEN RESULTS

OIL CHANGE INTERVALS EXTENDED

300 HOURS TO 700 HOURS

*"The vehicle has been driven 1.7 million kilometers with this filter and the water pump only needed to be changed once in this time."*

**- Randy O'Linyk, Owner Operator**

## CHALLENGE

Capture wear contamination missed by the trucks existing filtration system to prevent it from prematurely wearing on engine components. The main sources of engine oil contamination are air ingression, engine parts manufacturing, inherent wear particles in new oil, and break-in wear.

## SOLUTION

Install an OEI ADD-Vantage 9000 on the engine oil to filter wear contamination down to 4 microns and below.


## RESULTS

The ADD-Vantage 9000 filter consistently captured enough contamination that the owner/ operator was able to extend oil change intervals from 300 hours to 700 hours.

With OEI magnetic filtration protecting the engine components, the vehicle was driven 1.7 million kilometers only requiring a water pump replacement.

The ADD-Vantage 9000 was in service from 2002-2013. OEI replaced it with an updated, more efficient design which has been deployed for 6 years and counting.

PRODUCT RECOMMENDATION

**ADD-VANTAGE 9000**

# Lubricant Inspection Record

**METRO TECH SYSTEMS LTD.**
*Petroleum Products Consultants*
Bay 112, 5621 - 11th Street N.E.
Calgary, Alberta T2E 6Z7
Telephone (403) 295-8803 Fax (403) 295-3848
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ISO 9001 Registered Firm

| | |
|---|---|
| Client | R A Olinyk Holdings Ltd |
| Location | Calgary |
| Unit Number | 15-94KW |
| Component | Engine |
| Make/Model | CATERPILLAR 3406E KW W924 W |
| Serial # | |

| Lab Number: | RK5076 | SC6453 | SG8466 | TA2470 | TD3199 | New Oil |
|---|---|---|---|---|---|---|
| Sample Date: | Nov 30/11 | Mar 07/12 | Jul 20/12 | Dec 04/12 | Apr 22/13 | |
| Unit: | | | | | | |
| Oil: | 677.0 Hrs | 597.0 Hrs | 659.0 Hrs | 687.0 Hrs | 744.0 Hrs | |
| Oil Type: | SHELL SYN. T3 | ROTELLA T6 5W40 | ROTELLA T6 5W40 | ROTELLA T6 5W40 | ROTELLA T6 5W40 | ROTELLA T6 5W40 |
| **METALS (D5185): Milligrams per Kilogram (PPM)** | | | Highlighted Test Results Indicate Abnormal Concentrations | | | |
| Tin | 2 | 1 | 0 | 0 | 2 | 0 |
| Lead | 12 | 13 | 10 | 4 | 4 | 1 |
| Copper | 12 | 16 | 11 | 8 | 8 | 0.1 |
| Aluminum | 2 | 2 | 3 | 1 | 1 | 2 |
| Silicon | 5 | 5 | 5 | 3 | 3 | 5 |
| Iron | 40 | 32 | 36 | 32 | 27 | 2 |
| Chromium | 2 | 3 | 1 | 0.5 | 0.4 | 0 |
| Silver | 0 | 0 | 0 | 0 | 0 | 0 |
| Zinc | 1150 | 1150 | 1250 | 1250 | 1200 | 1250 |
| Magnesium | 950 | 1000 | 1150 | 1100 | 1100 | 1100 |
| Nickel | 1 | 2 | 0 | 0 | 0.7 | 0 |
| Barium | 0 | 0 | 0 | 0 | 0 | 0 |
| Sodium | 2 | 4 | 5 | 5 | 5 | 5 |
| Calcium | 850 | 768 | 545 | 904 | 889 | 774 |
| Vanadium | 0 | 0 | 0 | 0 | 0 | 0 |
| Phosphorus | 950 | 950 | 1100 | 1050 | 1050 | 1100 |
| Molybdenum | 58 | 64 | 67 | 60 | 65 | 63 |
| Boron | 19 | 21 | 18 | 17 | 21 | 68 |
| Manganese | 0 | 0 | 0 | 0 | 0 | 0 |
| **PHYSICAL PROPERTIES** | | | | | | |
| Viscosity (D445) @ 40°C | | | | | | |
| Viscosity (D445) @ 100°C | 13.36 | 13.31 | 13.08 | 13.43 | 13.36 | 14.09 |
| Water (D4007) (% v/v) | 0 | 0 | 0 | 0 | 0 | 0 |
| Solids (D4007) (% v/v) | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0 |
| Glycol | No | No | No | No | No | |
| Fuel Dilution | No | No | No | No | No | |
| **OTHER PROPERTIES** | | | | | | |
| Acid No. (D664) | | | | | | |
| Base No. (D2896) | | | | | | |
| Base No. (D4739) | | | | | | |
| Oxidation | | | | | | |
| Nitro Compounds | | | | | | |
| Organic Nitrates | | | | | | |
| Particle Count (ISO 4406) | | | | | | |
| Oil Changed? | YES | YES | YES | YES | YES | |

**COMMENTS** **RATING SYSTEM: A is LOW B is LOW to MODERATE C is MODERATE D is HIGH E is SEVERE**

RK5076 - Tests DO NOT indicate an immediate need for an oil change. Send in New Oil for Reference.
Soot content (B). Cylinders; pistons; rings wear (A). Main or rod bearing wear (A). Copper Wear (A)
SC6453 - Tests DO NOT indicate an immediate need for an oil change. Soot content (C).
Main or rod bearing wear (A). Cylinders; pistons; rings wear (A). Maintain routine sampling.
SG8466 - Tests DO NOT indicate an immediate need for an oil change. Soot content (B).
Cylinders; pistons; rings wear (A). Main or rod bearing wear (A). Maintain routine sampling.
TA2470 - Tests DO NOT indicate an immediate need for an oil change. Soot content (C).
Low alloy steel wear (A). Maintain routine sampling.
TD3199 - Tests DO NOT indicate an immediate need for an oil change. Soot content (B).
Low alloy steel wear (A). Please verify oil type. Maintain routine sampling. ** 5W50 oil was provided **

Laboratory Telephone (403) 295-8803 Results were verified on Apr 29/13 by F Saiad Shirabad 109290 01