



**FILTER
TECHNOLOGY**

cleaner fluids mean better business

CASE STUDY

Quarrying

Case No : 7 - 6 - 15

Oil Filtration, Komatsu WA600 Front End Loader : Boral Petrie

Boral Petrie contacted Filter Technology and asked if we could do an evaluation on their Komatsu WA600 front-end loader to reduce operating costs and extend oil drains. This machine does 3,000 hours a year loading dump trucks at the quarry face. Using past history it was agreed to install 2 x FMO3 oil filters. A sample of the new oil in the bulk storage tank was taken and returned an ISO of 18/15, the silicon was at 8ppm.

The silicon was entering through the breather on the bulk tank proving the need to install improved breather systems on the bulk storage tanks on site.

Sample 28643 was done at 369 hours and the oil was drained as the machine was up for its 20,000 hour major service.

Sample 30447 shows the oil at 444 hours with all wear metals at acceptable levels. Soot is still 10% lower than sample 26971 at 250 hours. The oil at 444 hours is at ISO 17/14, one code cleaner than the new oil sample. This represents a 30% reduction in particulate contamination. Silicon has been reduced from 8ppm to 5ppm - a 37% reduction.

Achieving 500 hour service intervals (rather than 250) saves \$825.00 in service cost per annum, to repay installation costs of \$1345.00 takes 18 months.



Lubetech Pty Ltd

Oil Analysis Report

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Client	Filter Technology Australia Pty Ltd / Queensland		
Contact	Ken Mortensen	Site	Boral Petrie
Address	31 Barakula Court Cedar Creek Qld 4207	Unit ID/Name	1271 / Wheel Loader
Telephone	07 55464256	Manufacture/Model	Komatsu / WA 600
Fax	07 5546 4214	Origin	Engine
		Fuel/Oil Type	Caltex Delo 500 15w/40



Diagnosis:

Wear condition appears satisfactory. Viscosity is elevated for 15w/40 oil. Recommend the oil be changed.
Note - Straight 40 grade is usually around 140-160 Cst. 15/40 is around 100Cst.

	30797	30447	29998	28643	27553	20971	Indicative Levels
Sample Number	30797	30447	29998	28643	27553	20971	
Date	29/11/2001	12/11/2001	20/10/2001	22/08/2001	29/06/2001	23/05/2001	
Total Hours/Km	20500	20409	2250	19665	19586		
Hours/Km on Oil	500	444	250	369	336		
Oil Changed	NO	NO	NO	NO	YES	NO	
Oil Added			12 ltrs				
Condition Tests							
Fuel Dilution (%)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	>4%
WT Solids (%)	3.3	4.0	2.6	2.8	4.1	4.4	>4%
Volume Water (%)	ND	ND	ND	ND	ND	ND	0.10
Water PPM							
Viscosity @ 40C (cST)	98	99	94	93	90	104	>10%
TAN (mg/KOH/g)			3.6				
TBN (mg/KOH/g)	4.5	4.5	5.5	5.0	3.0	5.0	
Aph							
PQ90 Index		+5	+1	-1	-4	-6	
Wear Metals							
Aluminum (Al)	<1	<1	<1	<1	<1	2	20
Silicon (Si)	10	5	5	<1	6	5	15
Tin (Sn)	<1	<1	2	3	<1	<1	20
Iron (Fe)	9	6	1	5	7	3	60
Lead (Pb)	19	6	7	4	<1	<1	40
Copper (Cu)	1	<1	2	2	2	1	45
Chromium (Cr)	<1	<1	<1	<1	<1	<1	15
Sodium (Na)	2	<1	<1	<1	2	1	30
Zinc (Zn)							
Others							
Cleanliness							
ISO4406	15/12	17/14	17/14	17/14	17/14		19/16
Gravi-Metric							
>2 micron	797	3121	2848	3003	2430		
>5 micron	294	1201	1052	1110	898		
>15 micron	31	130	112	118	95		
Contamination	Low	Moderate	Moderate	Moderate	Moderate		
Total Count							180
Severity Index							78
Size Ratio							2
% Large Particles							110

