

**PJ Berriman - Underground Mine Cruiser**

PJB ran some tests for FTA on their bypass oil and fuel filtration and what improvements, if any, it would have on a Rebuilt KIA 6/247 6 cylinder direct injection diesel engine. The engine had 20 hours running time and had been tuned for emissions not performance.



Fuel and oil samples were taken before and after the tests. Fuel was at an ISO of 18/15 and 0.3% water. After filtering the ISO was at 16/13, a 71% reduction, and the water had been removed. The removal of the water explains the 1.7% rise in NOx that occurred.

Oil tests indicated the ISO before filtration was at 19/16 and after at 16/13, an 88% reduction in particulate contamination.

Wear metals saw reduction in

- Silicon by 27%
- Iron by 51%
- Lead by 8%
- Copper by 23%
- Chromium by 35%
- Sodium by 62%

As wear generates wear this can only improve the engine longevity at this early stage.

Other improvements

- Torque increased 2.2%
- Power increased 2.7%
- Smoke (opacity) reduced 13.3%
- CO reduced 3.4%

Considering that this engine had already been tuned for emissions the addition of FTA filters produced an interesting result.



Site: OAO239RF  
 Unit ID/Name: Kia  
 Manufacture/Model: PJB After  
 Origin: Agri MP Plus  
 Fuel/Oil Type:

**Diagnosis:**

Very similar to the before sample except the levels are lower due to the extra filtration. As with the before sample, an oil change is still recommended to rid the system of 'running in' wear.

Sample Number	35034	35033
Date	02/07/2002	01/07/2002
Total Hours/Km		
Hours/Km on Oil		
Oil Changed	NO	NO
Oil Added		
Fuel Dilution (%)	<0.5	<0.5
WT Solids (%)	0.5	0.5
Volume Water (%)	ND	ND
Water PPM		
Viscosity @ 40C (cST)	133	135
TAN (mg/KOH/g)		
TBN (mg/KOH/g)	8.5	8.0
ApH		
PQ90 Index		
Aluminum (Al)	6	10
Silicon (Si)	27	37
Tin (Sn)	1	2
Iron (Fe)	37	76
Lead (Pb)	11	12
Copper (Cu)	30	39
Chromium (Cr)	25	39
Sodium (Na)	18	48
Zinc (Zn)	1200	1200
Others		
ISO4406	16/13	19/16
Gravi-Metric		
>2 micron	1340	11710
>5 micron	495	4331
>15 micron	53	462
Contamination	Moderate	Elevated