



**FILTER
TECHNOLOGY**

cleaner fluids mean better business

CASE STUDY

Hydraulics

Case No : 2 - 6 - 25

Liebherr 996 Face Shovel Oil Filtration: Griffin Coal, Western Australia

Liebherr informed Griffin Coal that they had to reduce their particle count in their 996 Face Shovel.



Griffin Coal contacted Equipment Placement, Filter Technology Australia's representative in Western Australia. They constructed a mobile unit to do the job while the machine was on a programmed shutdown. The shutdown allowed only 12 hours to circulate the 4,000 litres in the hydraulic system.

Before running the hydraulic oil through six FMO4s at 20 litres per minute, results indicate (sample 39895) the ISO of the oil to be 20/17. After filtration sample 39896 indicates the ISO of the oil at 17/13, a 90% reduction in particulate contamination.

A reduction in wear metals was also achieved with a 25% reduction in Silicon, 33% reduction in Iron and 53% reduction in copper.

Griffin Coal have put forward a justification to purchase the unit used here with the ultimate aim being to have fixed units on all machines.





Lubetech Pty Ltd

Oil Analysis Report

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Client Western Australia

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Site Griffin Coal

Unit ID/Name 3081

Manufacture/Model Liebherr / 996

Origin Hydraulic

Fuel/Oil Type Caltex Multigrade 15w/40

Diagnosis:

Oil and wear condition appear satisfactory. Sample taken after 12 hours of filtering.
 Improvement in readings noted.
 Continue to monitor.



		39896	39895					Indicative Levels	
		21/02/2003	20/02/2003						
Total Hours/Km									
Hours/Km on Oil									
Oil Changed		NO	NO						
Oil Added									
Condition Tests	Fuel Dilution (%)								
	WT Solids (%)								
	Volume Water (%)	ND	ND					0.05	
	Water PPM								
	Viscosity @ 40C (cST)	85	85					>10%	
	TAN (mg/KOH/g)	2.14	2.11						
	TBN (mg/KOH/g)								
Wear Metals	ApH								
	PQ90 Index								
	Aluminum (Al)	8	8					15	
	Silicon (Si)	23	31					20	
	Tin (Sn)	1	1					20	
	Iron (Fe)	8	12					25	
	Lead (Pb)	3	2					15	
	Copper (Cu)	6	13					25	
	Chromium (Cr)	1	1					15	
Sodium (Na)	7	7					80		
Zinc (Zn)	1192	1121							
Others									
Cleanliness	ISO4406	17/13	20/17					18/15	
	Gravi-Metric								
	>2 micron	1805	18161						
	>5 micron	667	6717						
	>15 micron	71	718						
Contamination	Moderate	Elevated							
DR Ferrrograph	Total Count							60	
	Severity Index							46	
	Size Ratio							1.1	
	% Large Particles							30	
	Wear Types	Rubbing							
		Fatigue							
		Laminar							
		Sliding							
Cutting									
Dark/Red Oxide									
Non-Ferrous									
Dirt/Sludge									
									