



**FILTER
TECHNOLOGY**

cleaner fluids mean better business

CASE STUDY

Mining

Case No : 2 - 6 - 25

Liebherr 996 Face Hydraulic System : Griffin Coal, Collie, 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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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	
Sample Number		39896	39895								
Date		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 (%)									0.05	
	Volume Water (%)	ND	ND								
	Water PPM										
	Viscosity @ 40C (cST)	85	85							>10%	
	TAN (mg/KOH/g)	2.14	2.11								
	TBN (mg/KOH/g)										
	ApH										
PQ90 Index											
Wear Metals	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											
											