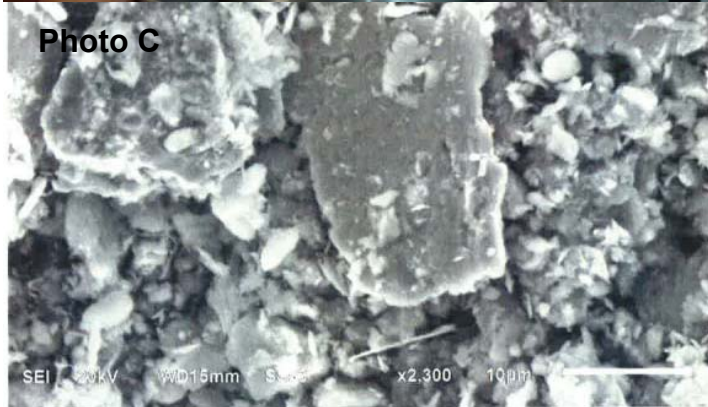


Case Study: Lube Oil Filtration August 2012- September 2013

Photo A**Photo B****Photo C**

STEP Energy Services Blackfalds Alberta, Canada

APPLICATION: Quintuplex Pump Power End Lube Oil Filtration on a Twin Pumper.

PROBLEM: Premature wear of the pump drive ends is the result of high levels of contamination under 10 microns in size. Left in the oil this contamination builds in volume, reduces the lubrication capability and accelerates the wear cycle. Traditional filtration is unable to remove contamination under 10 microns from lube oil.

SOLUTION: Dale Constantine, Maintenance Manager for STEP Energy Services tested and now employs OEI filtration systems as the standard for all their equipment. On this Twin Pumper Unit OEI's ADD-Vantage 9000 Dual Stage magnetic filter is installed on the power end lube oil system (Photo A) to remove the contamination under 10 microns.

RESULTS: Photo B shows the tremendous amount of trapped contamination removed by the two stage magnetic filter during their yearly PM. STEP Energy Services analyzed the contamination and found that it contained a large amount of both ferrous and non-ferrous particles from 30 microns down to sub-micron levels (Photo C).

The analysis conducted on the contamination identified that over 50% was iron oxide, 40% non ferrous and 7% water. The majority of the particles were found to be less than 10 micron" in size (Page 2). OEI magnetic filtration systems have become a significant "part of the solution" in improving STEP Energy Services' maintenance program. By reducing downtime and operational costs STEP Energy Services is enjoying a high level of equipment reliability in their industry.

RECOMMENDATION: OEI filtration technology removes contamination down to sub-micron levels extending the life of lube oils, coolant & hydraulic fluids and the related components. For more information, contact our office at 403-242-4221 or visit our website at www.oneeyeindustries.com

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
 eMail metrotech@metrotechsystems.ca

ISO 9001:2000
 Registered Firm

Client: STEP Energy Services
 Location: 33P05RMP
 Unit Number: RIGHT MAGNET
 Component: Power End Lube
 Make/Model:
 Serial #:

Lab Number:	TH5077	New Oil
Sample Date:	Aug 20/13	
Unit:	2747.0 Hrs	
Oil:		
Oil Type:	TRAXON E CD-50	TRAXON E CD-50
METALS (D5185): Milligrams per Kilogram (PPM)		
Highlighted Test Results Indicate Abnormal Concentrations		
Tin	29	0
Lead	3	1
Copper	87	0.1
Aluminum	6	1
Silicon	18	2
Iron	509	2
Chromium	32	0
Silver	0	0
Zinc	46	2
Magnesium	2	0
Nickel	119	0
Barium	0	0
Sodium	22	2
Calcium	340	46
Vanadium	0	0
Phosphorus	1000	1300
Molybdenum	0	0
Boron	37	283
Manganese	2	0
PHYSICAL PROPERTIES		
Viscosity (D445) @ 40°C		
Viscosity (D445) @ 100°C	**	16.95
Water (D4007) (% v/v)	>8	0
Solids (D4007) (% v/v)	**	0
Glycol		
Fuel Dilution		
OTHER PROPERTIES		
Acid No. (D664)	13.10	
Base No. (D2896)		
Base No. (D4739)		
Oxidation		
Nitro Compounds		
Organic Nitrates		
Particle Count (ISO 4406)		
Oil Changed?	No	
COMMENTS		
RATING SYSTEM: A is LOW B is LOW to MODERATE C is MODERATE D is HIGH E is SEVERE		
TH5077 - ** See SEM/EDS report also. Viscosity was obscured due to too viscous **		
Laboratory Telephone (403) 295-8803 Results were verified on Aug 28/13 by F Saïad Shirabad 112264 01		

