Southwest Spectro-Chem Labs

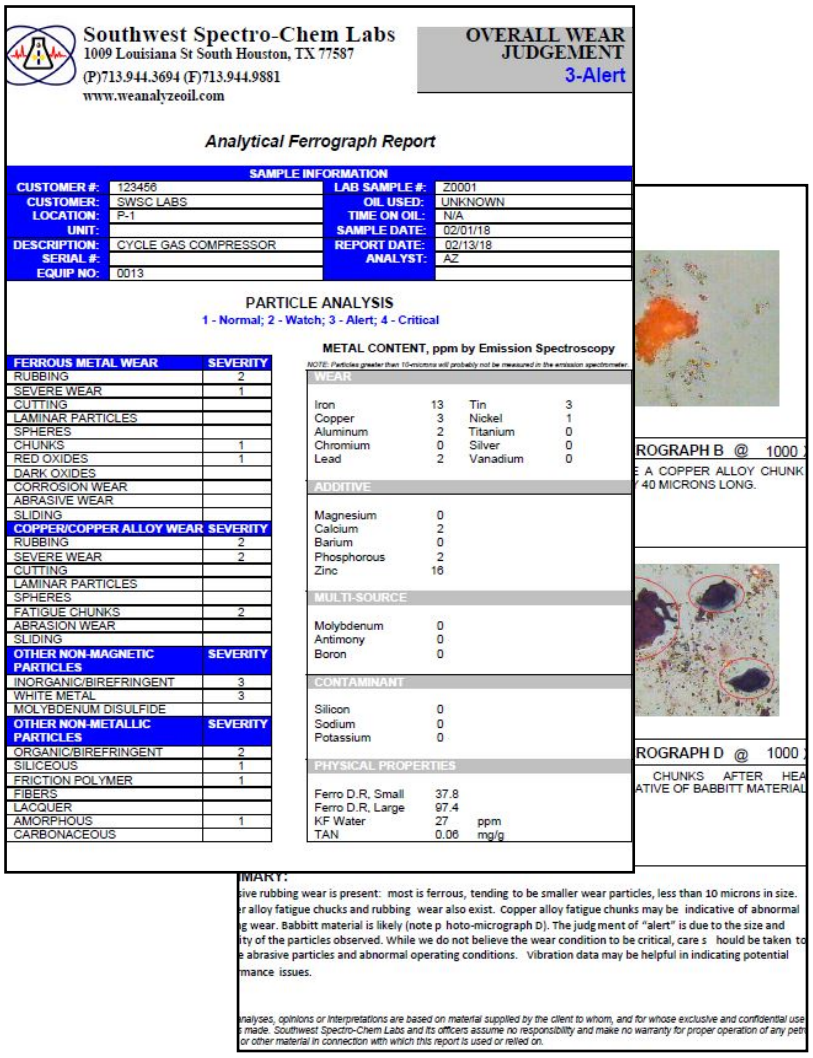
Analytical Ferrography

Analytical Ferrography is a powerful tool in qualifying particle types and sources. This procedure is a micro-examination of particles present in your machinery. Identify severe wear, corrosion and contamination, indicative of machinery condition. The analyst will provide a “Wear Judgement”, highlighting causes for concern.

BENEFITS

- (Visual) microscopic photo evidence
- Identify wear type
- Isolate component wear
- Identify contaminant, especially non-metallic
- Post-mortem evaluation for causes of failure

* Any sample that has already been analyzed can be upgraded to a full analytical ferrography. Just give us a call or send us an email with your request. Samples are stored for three months before disposal.



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OVERALL WEAR JUDGEMENT
3-Alert

Analytical Ferrograph Report

SAMPLE INFORMATION			
CUSTOMER #:	123456	LAB SAMPLE #:	Z0001
CUSTOMER:	SWSC LABS	OIL USED:	UNKNOWN
LOCATION:	P-1	TIME ON OIL:	N/A
UNIT:		SAMPLE DATE:	02/01/18
DESCRIPTION:	CYCLE GAS COMPRESSOR	REPORT DATE:	02/13/18
SERIAL #:		ANALYST:	AZ
EQUIP NO:	0013		

PARTICLE ANALYSIS
1 - Normal; 2 - Watch; 3 - Alert; 4 - Critical

FERROUS METAL WEAR	SEVERITY
RUBBING	2
SEVERE WEAR	1
CUTTING	
LAMINAR PARTICLES	
SPHERES	
CHUNKS	1
RED OXIDES	1
DARK OXIDES	
CORROSION WEAR	
ABRASIVE WEAR	
SLIDING	
COPPER/COPPER ALLOY WEAR	**SEVERITY**
RUBBING	2
SEVERE WEAR	2
CUTTING	
LAMINAR PARTICLES	
SPHERES	
FATIGUE CHUNKS	2
ABRASION WEAR	
SLIDING	
OTHER NON-MAGNETIC PARTICLES	**SEVERITY**
INORGANIC/BIREFRINGENT	3
WHITE METAL	3
MOLYBDENUM DISULFIDE	
OTHER NON-METALLIC PARTICLES	**SEVERITY**
ORGANIC/BIREFRINGENT	2
SILICEOUS	1
FRICTION POLYMER	1
FIBERS	
LACQUER	
AMORPHOUS	1
CARBONACEOUS	

METAL CONTENT, ppm by Emission Spectroscopy
NOTE: Particles greater than 10-microns will probably not be measured in the emission spectrometer.

WEAR			
Iron	13	Tin	3
Copper	3	Nickel	1
Aluminum	2	Titanium	0
Chromium	0	Silver	0
Lead	2	Vanadium	0

ADDITIVE	
Magnesium	0
Calcium	2
Barium	0
Phosphorous	2
Zinc	16

MULTI-SOURCE	
Molybdenum	0
Antimony	0
Boron	0

CONTAMINANT	
Silicon	0
Sodium	0
Potassium	0

PHYSICAL PROPERTIES		
Ferro D.R. Small	37.8	
Ferro D.R. Large	97.4	
KF Water	27	ppm
TAN	0.06	mg/g

ROGRAPH B @ 1000
A COPPER ALLOY CHUNK
40 MICRONS LONG.

ROGRAPH D @ 1000
CHUNKS AFTER HEA
ATIVE OF BABBITT MATERIAL

MARY:
ive rubbing wear is present: most is ferrous, tending to be smaller wear particles, less than 10 microns in size.
r alloy fatigue chucks and rubbing wear also exist. Copper alloy fatigue chunks may be indicative of abnormal
g wear. Babbitt material is likely (note p hoto-micrograph D). The judg ment of “alert” is due to the size and
ty of the particles observed. While we do not believe the wear condition to be critical, care s hould be taken to
e abrasive particles and abnormal operating conditions. Vibration data may be helpful in indicating potential
rmance issues.

nalyses, opinions or interpretations are based on material supplied by the client to whom, and for whose exclusive and confidential use
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