

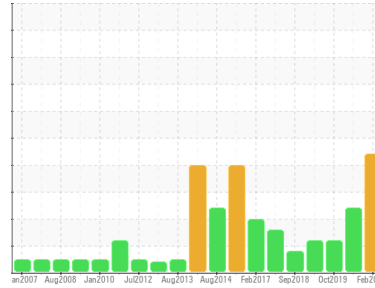
PROBLEM SUMMARY

Sample Rating Trend

ISO

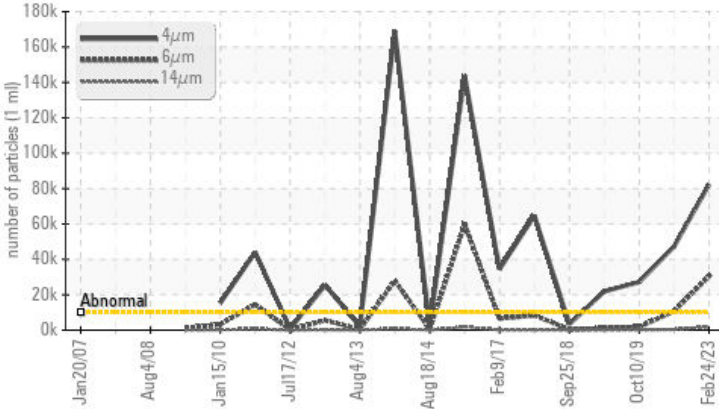


Area
1621
Machine Id
1621-5433-6001 - CONCENTRATE RECEIVING STATION AIR COMPRESSOR
Component
Air Compressor
Fluid
INGERSOLL-RAND SSR ULTRA COOLANT (13 LTR)



COMPONENT CONDITION SUMMARY

Particle Trend



RECOMMENDATION

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation.

PROBLEMATIC TEST RESULTS

Sample Status			SEVERE	ABNORMAL	ABNORMAL
Particles >4µm	ASTM D7647	>10000	82261	47338	27172
Particles >6µm	ASTM D7647	>2500	30488	10744	1844
Particles >14µm	ASTM D7647	>320	1770	336	125
Particles >21µm	ASTM D7647	>80	248	31	40
Oil Cleanliness	ISO 4406 (c)	>20/18/15	24/22/18	23/21/16	22/18/14

Customer Id: INCVOS
Sample No.: PC0040351
Lab Number: 02542934
Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data:
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Kevin.Marson@wearcheck.com

To change component or sample information:
Gloria Gonzalez +1 (289)291-4643 x4643
gloria.gonzalez@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Filter	---	---	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.
Resample	---	---	?	Resample in 30-45 days to monitor this situation.
Check Breathers	---	---	?	The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather.
Check Dirt Access	---	---	?	We advise that you check all areas where contaminants can enter the system.
Filter Fluid	---	---	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.

HISTORICAL DIAGNOSIS

30 May 2022 Diag: Kevin Marson

VISCOSITY



We recommend you service the filters on this component. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition. The fluid was specified as INGERSOLL-RAND ULTRA PLUS COOLANT, however, a fluid match indicates that this fluid is ISO 46 Synthetic (PAG) Compressor Oil. Please confirm the oil type and grade on your next sample. All component wear rates are normal. Oil Cleanliness are abnormally high. Particles >4µm are abnormally high. Particles >6µm are abnormally high. Particles >14µm are notably high. The water content is negligible. Viscosity of sample indicates oil is within ISO 46 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report



10 Oct 2019 Diag: Bill Quesnel

VISCOSITY



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view report



03 Apr 2019 Diag: Kevin Marson

VISCOSITY



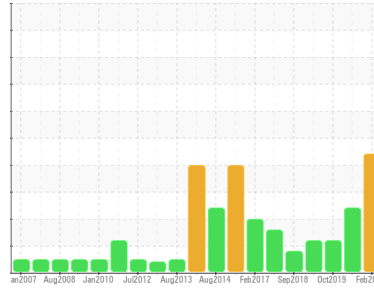
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view report





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1621
Machine Id
1621-5433-6001 - CONCENTRATE RECEIVING STATION AIR COMPRESSOR
Component
Air Compressor
Fluid
INGERSOLL-RAND SSR ULTRA COOLANT (13 LTR)



DIAGNOSIS

Recommendation
We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation.

Wear
All component wear rates are normal.

Contamination
Particles >6µm are severely high. Particles >4µm are severely high. Oil Cleanliness are severely high. Particles >14µm are abnormally high. Particles >21µm are abnormally high. The water content is negligible.

Fluid Condition
The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	PC0040351	PC0040010	PC349843
Sample Date	Client Info	24 Feb 2023	30 May 2022	10 Oct 2019
Machine Age	yrs Client Info	0	0	0
Oil Age	yrs Client Info	0	0	0
Oil Changed	Client Info	N/A	N/A	N/A
Sample Status		SEVERE	ABNORMAL	ABNORMAL

WEAR METALS

method	limit/base	current	history1	history2
PQ	ASTM D8184*	0	0	---
Iron	ppm ASTM D5185(m) >50	1	<1	<1
Chromium	ppm ASTM D5185(m) >4	0	0	0
Nickel	ppm ASTM D5185(m) >4	<1	<1	<1
Titanium	ppm ASTM D5185(m)	0	0	0
Silver	ppm ASTM D5185(m)	0	0	<1
Aluminum	ppm ASTM D5185(m) >10	0	<1	<1
Lead	ppm ASTM D5185(m) >20	0	0	0
Copper	ppm ASTM D5185(m) >40	<1	<1	<1
Tin	ppm ASTM D5185(m) >5	0	0	0
Antimony	ppm ASTM D5185(m)	0	0	<1
Vanadium	ppm ASTM D5185(m)	0	0	0
Beryllium	ppm ASTM D5185(m)	0	0	0
Cadmium	ppm ASTM D5185(m)	0	0	0

ADDITIVES

method	limit/base	current	history1	history2
Boron	ppm ASTM D5185(m) 0	<1	1	1
Barium	ppm ASTM D5185(m) 500	980	984	720
Molybdenum	ppm ASTM D5185(m) 0	0	0	0
Manganese	ppm ASTM D5185(m)	0	0	0
Magnesium	ppm ASTM D5185(m) 0	0	0	<1
Calcium	ppm ASTM D5185(m) 0	<1	2	6
Phosphorus	ppm ASTM D5185(m) 20	0	1	2
Zinc	ppm ASTM D5185(m) 0	2	1	4
Sulfur	ppm ASTM D5185(m) 200	310	286	300
Lithium	ppm ASTM D5185(m)	<1	0	<1

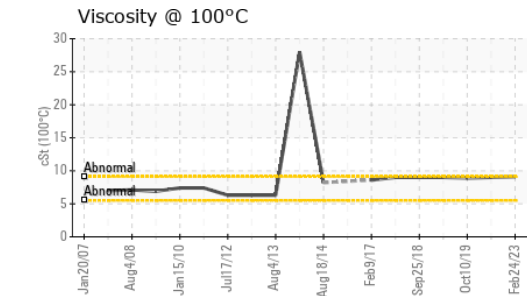
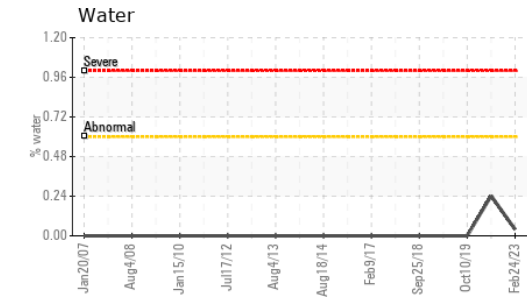
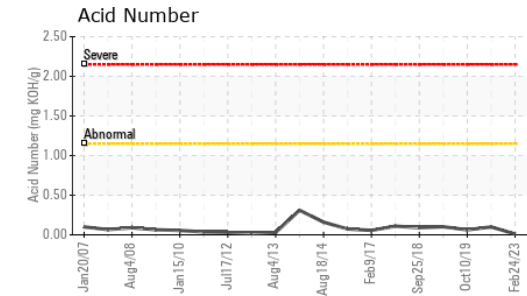
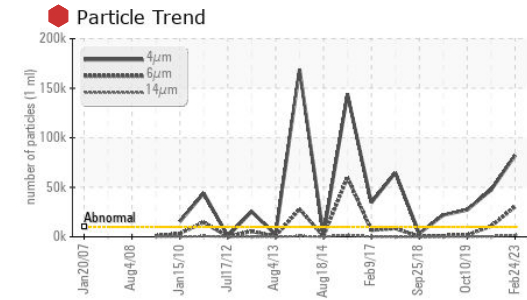
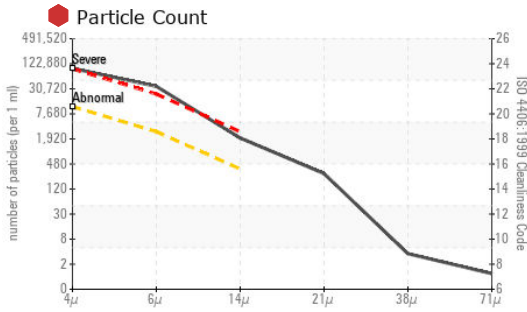
CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185(m) >25	<1	4	<1
Sodium	ppm ASTM D5185(m)	4	3	13
Potassium	ppm ASTM D5185(m) >20	<1	<1	1
Water	% ASTM D6304* >0.6	0.039	0.242	---
ppm Water	ppm ASTM D6304* >6000	390.6	2427.6	---

FLUID CLEANLINESS

method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647 >10000	82261	47338	27172
Particles >6µm	ASTM D7647 >2500	30488	10744	1844
Particles >14µm	ASTM D7647 >320	1770	336	125
Particles >21µm	ASTM D7647 >80	248	31	40
Particles >38µm	ASTM D7647 >20	3	1	0
Particles >71µm	ASTM D7647 >4	1	0	0
Oil Cleanliness	ISO 4406 (c) >20/18/15	24/22/18	23/21/16	22/18/14

OIL ANALYSIS REPORT

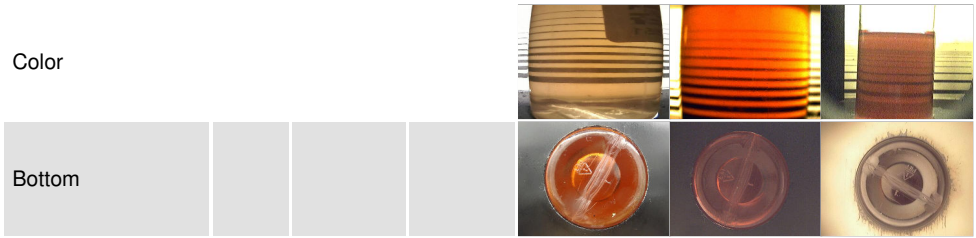


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*		0.01	0.10	0.063

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	NONE	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	NONE
Precipitate	scalar	Visual*	NONE	NONE	NONE	NONE
Silt	scalar	Visual*	NONE	NONE	NONE	NONE
Debris	scalar	Visual*	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	Visual*	NONE	NONE	NONE	NONE
Appearance	scalar	Visual*	NORML	NORML	NORML	NORML
Odor	scalar	Visual*	NORML	NORML	NORML	NORML
Emulsified Water	scalar	Visual*	>0.6	NEG	NEG	NEG
Free Water	scalar	Visual*		NEG	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	49.4	50.4	▲ 49.8	▲ 49.9
Visc @ 100°C	cSt	ASTM D7279(m)		9.1	▲ 9	▲ 8.9
Viscosity Index (VI)	Scale	ASTM D2270*	161	163	163	159

SAMPLE IMAGES



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC0040351 **Received** : 03 Mar 2023
Lab Number : **02542934** **Diagnosed** : 06 Mar 2023
Unique Number : 5539939 **Diagnostician** : Kevin Marson
Test Package : IND 2 (Additional Tests: KF, KV100, PrtCount, VI)

Vale - Voisey's Bay
 Voisey's Bay Mine Site, P.O. Box 7001, Str. C Happy Valley
 Goose Bay, NL
 CA A0P 1C0
 Contact: Robert Feltham
 robert.feltham@vale.com

To discuss this sample report, contact Customer Service at 1-800-268-2131.
 Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
 Validity of results and interpretation are based on the sample and information as supplied.

T:
F: