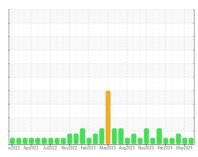


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id **HSS - HIGH PRESS**

Hydraulic System

TOTAL AZOLLA ZS 22 (5 GAL)

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Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Sample Date Client Info 0 3 Jun 2024 01 May 2024 01 Apr 2024	ničisi 2. Aprilisi 2. Marilisi 2. Marilisi 2. Marilisi 3. Marylisi 3. Marylisi 3. Marylisi 3. Marylisi 3. Marylisi 3. Marylisi 4. Marylisi						
Sample Date Name	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age Dil Age hrs Olient Info 0 4 1 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 1 2 2 1 1	Sample Number		Client Info		WC0921228	WC0921223	WC0921218
Oil Age Oil Changed hrs Client Info N/A N/	Sample Date		Client Info		03 Jun 2024	01 May 2024	01 Apr 2024
Cilient Info	Machine Age	hrs	Client Info		0	0	0
NORMAL NORMAL ATTENTION CONTAMINATION method limit/base current history1 history2 history2	Oil Age	hrs	Client Info		0	0	0
Water WC Method So.05 NEG NEG NEG NEG	Oil Changed		Client Info		N/A	N/A	N/A
Water WC Method >0.05 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 1 1 2 Chromium ppm ASTM D5185m >20 -1 0 <1	Sample Status				NORMAL	NORMAL	ATTENTION
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 1 1 2 Chromium ppm ASTM D5185m >20 -1 0 -1 Nickel ppm ASTM D5185m >20 0 0 -1 Silver ppm ASTM D5185m 0 0 -1 -1 Aluminum ppm ASTM D5185m >20 -1 0 -1 Alead ppm ASTM D5185m >20 -1 0 1 Lead ppm ASTM D5185m >20 -1 0 1 Copper ppm ASTM D5185m >20 -1 0 1 Vanadium ppm ASTM D5185m 0 0 -1 0 Cadmium ppm ASTM D5185m 0 0 -1 0 Barium ppm ASTM D5185m 0 0 -1	CONTAMINATION	V	method	limit/base	current	history1	history2
Description Depth ASTM D5185m September Se	Water		WC Method	>0.05	NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>20	1	1	2
Titanium ppm ASTM D5185m 0 0 <1	Chromium		ASTM D5185m	>20	<1	0	<1
Silver	Nickel	ppm	ASTM D5185m	>20	0	0	<1
Aluminum ppm ASTM D5185m >20 1 0 2 Lead ppm ASTM D5185m >20 <1 0 1 Copper ppm ASTM D5185m >20 <1 0 1 Vanadium ppm ASTM D5185m >20 <1 0 1 Vanadium ppm ASTM D5185m >20 <1 0 1 Vanadium ppm ASTM D5185m 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 0 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 2 2 <1 2 0 0 <1 0 <1 Cadmium ppm ASTM D5185m 2 301 322 347 Calcium ppm ASTM D5185m 301 322 347 ContraMINANTS 0 0 0 0 0 0 0 0 CONTAMINANTS 0 0 0 0 0 0 0 0 CONTAMINANTS 0 0 0 0 0 0 0 0 CONTAMINANTS 0 0 0 0 0 0 0 0 0 Coli Cleanliness 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Titanium	ppm	ASTM D5185m		0	0	<1
Lead ppm ASTM D5185m >20 <1	Silver	ppm	ASTM D5185m		0	0	<1
Copper ppm ASTM D5185m >20 3 3 3 Tin ppm ASTM D5185m >20 <1 0 1 Vanadium ppm ASTM D5185m 0 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 <1 0 Barium ppm ASTM D5185m 0 0 <1 0 Molybdenum ppm ASTM D5185m 0 0 <1 0 Magnesium ppm ASTM D5185m 0 0 <1 0 Magnesium ppm ASTM D5185m 2 <1 2 <1 2 Calcium ppm ASTM D5185m 301 322 347 347 Zinc ppm ASTM D5185m 301 322 347 340	Aluminum	ppm	ASTM D5185m	>20	1	0	2
Tin	Lead	ppm	ASTM D5185m	>20	<1	0	1
Vanadium ppm ASTM D5185m 0 0 <1	Copper	ppm	ASTM D5185m	>20	3	3	3
Cadmium ppm ASTM D5185m 0 0 <1	Tin	ppm	ASTM D5185m	>20	<1	0	1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 <1 Barium ppm ASTM D5185m 0 <1 0 Molybdenum ppm ASTM D5185m 0 0 <1 Manganese ppm ASTM D5185m 2 <1 2 Calcium ppm ASTM D5185m 46 46 52 Phosphorus ppm ASTM D5185m 301 322 347 Zinc ppm ASTM D5185m 427 400 410 Sulfur ppm ASTM D5185m 873 989 889 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 3 3 3 Sodium ppm ASTM D5185m >20 1 0 2 FLUID CLEANLINESS method limit/base curr	Vanadium	ppm	ASTM D5185m		0	0	<1
Boron ppm ASTM D5185m 0 0 0 0	Cadmium	ppm	ASTM D5185m		0	0	<1
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 0 <1	Boron	ppm	ASTM D5185m		0	0	<1
Manganese ppm ASTM D5185m 0 0 <1	Barium	ppm	ASTM D5185m		0	<1	0
Magnesium ppm ASTM D5185m 2 <1	Molybdenum	ppm	ASTM D5185m		0	0	<1
Calcium ppm ASTM D5185m 46 46 52 Phosphorus ppm ASTM D5185m 301 322 347 Zinc ppm ASTM D5185m 427 400 410 Sulfur ppm ASTM D5185m 873 989 889 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 3 3 3 Sodium ppm ASTM D5185m >1 1 0 0 Potassium ppm ASTM D5185m >20 1 0 2 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >2500 1577 2015 2563 Particles >514μm ASTM D7647 >80 9 9 20 Particles >21μm ASTM D7647 >20 4 2 3 <td< th=""><th>Manganese</th><th>ppm</th><th>ASTM D5185m</th><th></th><th>0</th><th>0</th><th><1</th></td<>	Manganese	ppm	ASTM D5185m		0	0	<1
Phosphorus ppm ASTM D5185m 301 322 347 Zinc ppm ASTM D5185m 427 400 410 Sulfur ppm ASTM D5185m 873 989 889 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 3 3 3 Sodium ppm ASTM D5185m <1 1 0 0 Potassium ppm ASTM D5185m >20 1 0 2 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >2500 1577 2015 2563 Particles >6μm ASTM D7647 >80 9 9 20 Particles >21μm ASTM D7647 >20 4 2 3 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness	Magnesium	ppm	ASTM D5185m		2	<1	2
Zinc ppm ASTM D5185m 427 400 410	Calcium	ppm	ASTM D5185m		46	46	52
Sulfur ppm ASTM D5185m 873 989 889 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 3 3 3 Sodium ppm ASTM D5185m <1 1 0 0 Potassium ppm ASTM D5185m >20 1 0 2 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >2500 1577 2015 2563 Particles >6µm ASTM D7647 >640 168 160 396 Particles >14µm ASTM D7647 >80 9 9 20 Particles >21µm ASTM D7647 >20 4 2 3 Particles >38µm ASTM D7647 >4 0 0 0 Particles >71µm ASTM D7647 >3 0 0 0 Oil Cleanliness	Phosphorus	ppm	ASTM D5185m		301	322	347
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 3 3 3 Sodium ppm ASTM D5185m <1 1 0 0 Potassium ppm ASTM D5185m >20 1 0 2 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >2500 1577 2015 2563 Particles >6μm ASTM D7647 >640 168 160 396 Particles >14μm ASTM D7647 >80 9 9 20 Particles >21μm ASTM D7647 >20 4 2 3 Particles >38μm ASTM D7647 >4 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >18/16/13 18/15/10 18/14/10 19/16/11 <th>Zinc</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th>427</th> <th>400</th> <th>410</th>	Zinc	ppm	ASTM D5185m		427	400	410
Silicon ppm ASTM D5185m >15 3 3 3 Sodium ppm ASTM D5185m <1	Sulfur	ppm	ASTM D5185m		873	989	889
Sodium ppm ASTM D5185m <1	CONTAMINANTS	;	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 1 0 2 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >2500 1577 2015 2563 Particles >6μm ASTM D7647 >640 168 160 396 Particles >14μm ASTM D7647 >80 9 9 20 Particles >21μm ASTM D7647 >20 4 2 3 Particles >38μm ASTM D7647 >4 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >18/16/13 18/15/10 18/14/10 19/16/11	Silicon	ppm	ASTM D5185m	>15	3	3	3
FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >2500 1577 2015 2563 Particles >6μm ASTM D7647 >640 168 160 396 Particles >14μm ASTM D7647 >80 9 9 20 Particles >21μm ASTM D7647 >20 4 2 3 Particles >38μm ASTM D7647 >4 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >18/16/13 18/15/10 18/14/10 19/16/11	Sodium	ppm	ASTM D5185m		<1	1	0
Particles >4μm ASTM D7647 >2500 1577 2015 2563 Particles >6μm ASTM D7647 >640 168 160 396 Particles >14μm ASTM D7647 >80 9 9 20 Particles >21μm ASTM D7647 >20 4 2 3 Particles >38μm ASTM D7647 >4 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >18/16/13 18/15/10 18/14/10 19/16/11	Potassium	ppm	ASTM D5185m	>20	1	0	2
Particles >6μm ASTM D7647 >640 168 160 396 Particles >14μm ASTM D7647 >80 9 9 20 Particles >21μm ASTM D7647 >20 4 2 3 Particles >38μm ASTM D7647 >4 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >18/16/13 18/15/10 18/14/10 19/16/11	FLUID CLEANLIN	IESS	method	limit/base	current	history1	history2
Particles >14μm ASTM D7647 >80 9 9 20 Particles >21μm ASTM D7647 >20 4 2 3 Particles >38μm ASTM D7647 >4 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >18/16/13 18/15/10 18/14/10 19/16/11	Particles >4µm		ASTM D7647	>2500	1577	2015	2563
Particles >21μm ASTM D7647 >20 4 2 3 Particles >38μm ASTM D7647 >4 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >18/16/13 18/15/10 18/14/10 19/16/11	Particles >6µm		ASTM D7647	>640	168	160	396
Particles >38μm ASTM D7647 >4 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >18/16/13 18/15/10 18/14/10 19/16/11	Particles >14µm		ASTM D7647	>80	9	9	20
Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >18/16/13 18/15/10 18/14/10 19/16/11	Particles >21μm		ASTM D7647	>20	4	2	3
Oil Cleanliness ISO 4406 (c) >18/16/13 18/15/10 18/14/10 1 9/16/11	Particles >38μm		ASTM D7647	>4	0	0	0
.,	Particles >71μm		ASTM D7647	>3	0	0	0
	Oil Cleanliness		ISO 4406 (c)	>18/16/13	18/15/10	18/14/10	19/16/11
FLUID DEGRADATION method limit/base current history1 history2	FLUID DEGRADA	TION	method	limit/base	current	history1	history2

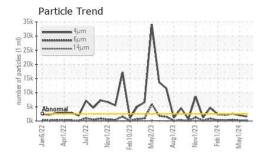
Acid Number (AN)

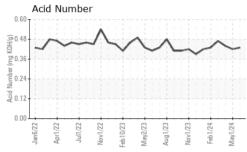
mg KOH/g ASTM D8045

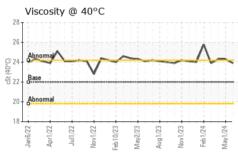
0.42 Contact/Location: Kristina Smith - HAWCHANC

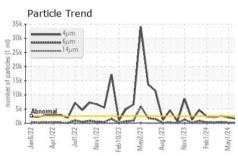


OIL ANALYSIS REPORT







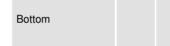


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FILLID DDODEDTIFO						
FLUID PROPERT	IES	method				history2

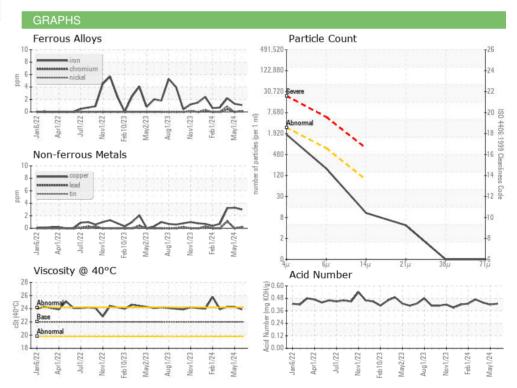
FLUID FROFEI	71163	memou			HISTORY	HISTORY
Visc @ 40°C	cSt	ASTM D445	22	23.9	24.3	24.3

SAMPLE IMAGES	method	

Color











Certificate 12367

Laboratory Sample No.

Test Package : IND 2

: WC0921228 Lab Number : 06199077 Unique Number : 11061200

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received

: 04 Jun 2024 **Tested** : 05 Jun 2024 Diagnosed : 05 Jun 2024 - Wes Davis

HAWE HYDRAULICS - HUNTERSVILLE

13020 JAMESBURG DR SUITE A HUNTERSVILLE, NC

US 28078 Contact: Kristina Smith k.smith@hawe.com

T: (704)927-5610

F: (704)509-6302

To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)