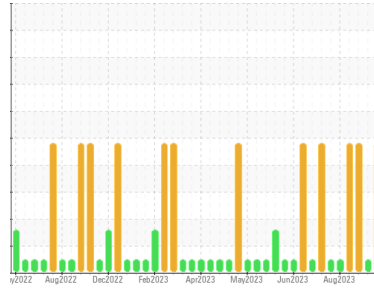




OIL ANALYSIS REPORT

Sample Rating Trend



DIRT



Machine Id
ZOKM02BE (S/N GZJ00540)
 Component
Biogas Engine
 Fluid
SHELL MYSELLA S5 S (--- GAL)

DIAGNOSIS

Recommendation

We recommend that you drain the oil from the component if this has not already been done. The filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

Elemental level of silicon (Si) above normal indicating ingress of seal material.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		WC0770233	WC0770231	WC0770229
Sample Date	Client Info		25 Sep 2023	14 Sep 2023	05 Sep 2023
Machine Age	hrs	Client Info	79424	79163	78966
Oil Age	hrs	Client Info	400	139	791
Oil Changed	Client Info		Not Chngd	Changed	Not Chngd
Sample Status			SEVERE	NORMAL	SEVERE

CONTAMINATION

	method	limit/base	current	history1	history2
Fuel	WC Method	>4.0	<1.0	<1.0	<1.0
Glycol	WC Method		NEG	NEG	NEG

WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >15	4	3	6
Chromium	ppm	ASTM D5185m >4	<1	<1	<1
Nickel	ppm	ASTM D5185m >2	<1	0	<1
Titanium	ppm	ASTM D5185m	0	0	0
Silver	ppm	ASTM D5185m >5	0	0	0
Aluminum	ppm	ASTM D5185m >6	3	4	4
Lead	ppm	ASTM D5185m >9	1	<1	<1
Copper	ppm	ASTM D5185m >6	1	<1	1
Tin	ppm	ASTM D5185m >4	4	2	5
Vanadium	ppm	ASTM D5185m	0	0	0
Cadmium	ppm	ASTM D5185m	0	0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	3	2	3
Barium	ppm	ASTM D5185m	2	0	2
Molybdenum	ppm	ASTM D5185m	3	2	5
Manganese	ppm	ASTM D5185m	0	0	0
Magnesium	ppm	ASTM D5185m	14	12	19
Calcium	ppm	ASTM D5185m	1560	1493	1651
Phosphorus	ppm	ASTM D5185m 300	327	314	342
Zinc	ppm	ASTM D5185m	421	405	438
Sulfur	ppm	ASTM D5185m	3551	3693	3589

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >181	249	126	318
Sodium	ppm	ASTM D5185m	0	0	<1
Potassium	ppm	ASTM D5185m >20	<1	<1	1

INFRA-RED

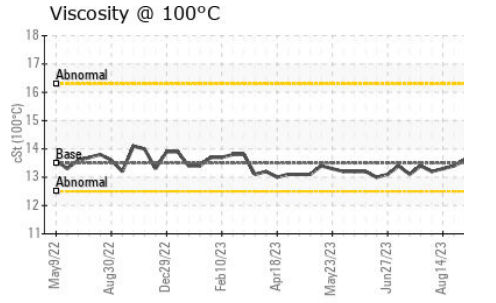
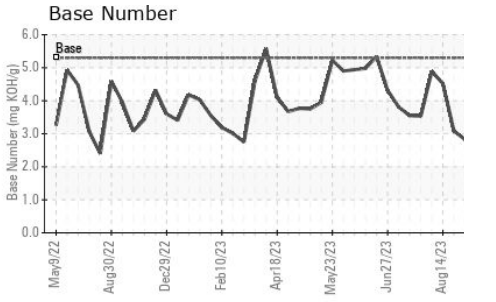
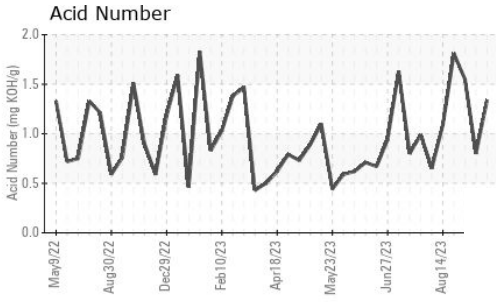
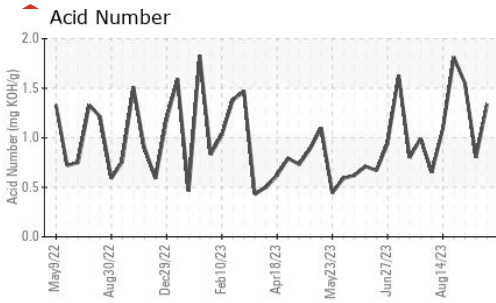
	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	0	0	0.1
Nitration	Abs/cm	*ASTM D7624 >20	4.4	4.3	5.1
Sulfation	Abs/.1mm	*ASTM D7415 >30	22.0	18.5	24.8

FLUID DEGRADATION

	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414 >25	13.8	11.0	16.3
Acid Number (AN)	mg KOH/g	ASTM D8045	1.34	0.80	1.55
Base Number (BN)	mg KOH/g	ASTM D2896 5.3	3.22	3.73	2.82



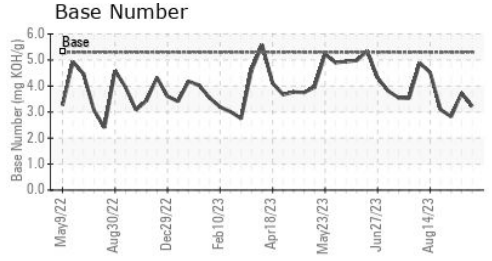
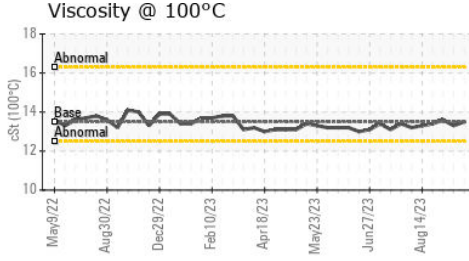
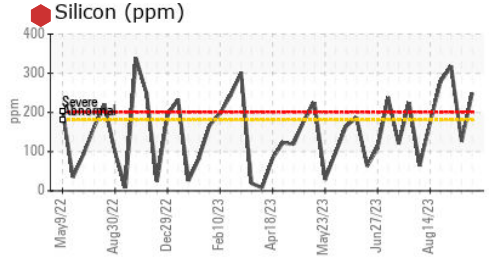
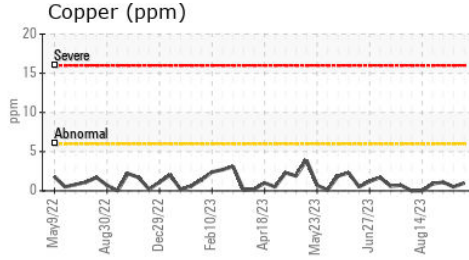
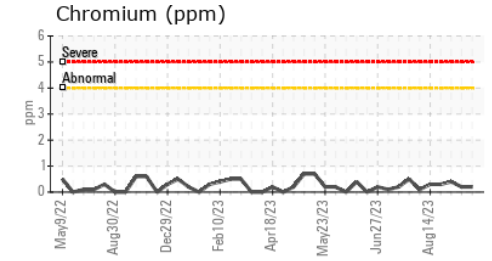
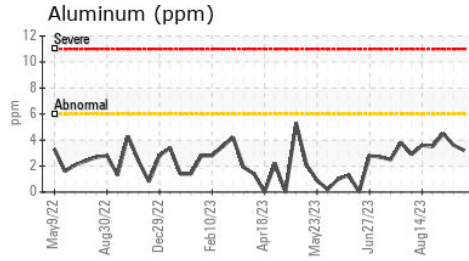
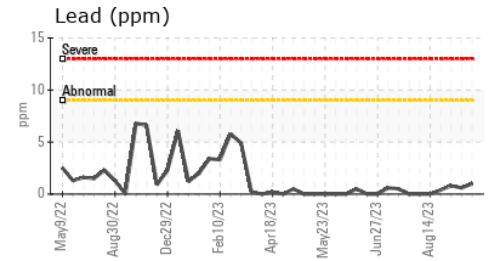
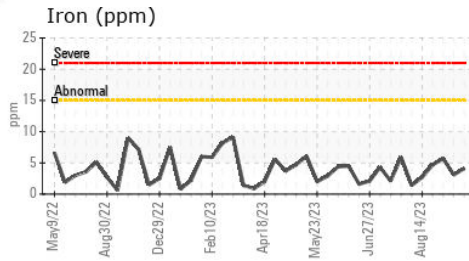
OIL ANALYSIS REPORT



VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	13.5	13.3	13.6

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
 Sample No. : WC0770233 Received : 28 Sep 2023
 Lab Number : 05963681 Diagnosed : 29 Sep 2023
 Unique Number : 10670232 Diagnostician : Sean Felton
 Test Package : MOB 2

EDL NA Recips-Zook
 Zook Powerstation, 388 E. Main Street
 Leola, PA
 US 17540-1925
 Contact: Kevin Johnson
 kevin.johnson@edlenergy.com

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)

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