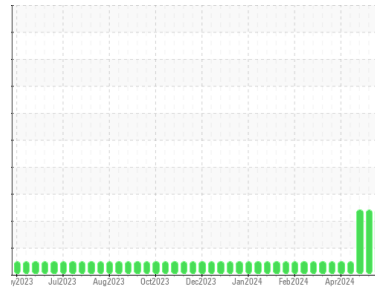




OIL ANALYSIS REPORT

Sample Rating Trend



GLYCOL



Machine Id
E-2 (S/N 1144675)
 Component
Biogas Engine
 Fluid
MAHLER Q8 Mahler G8 SAE 40 (--- GAL)

DIAGNOSIS

Recommendation

We advise that you check for possible coolant leak. Check for low coolant level. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

Sodium and/or potassium levels remain high.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		WC0914327	WC0914280	WC0914283
Sample Date	Client Info		09 May 2024	22 Apr 2024	17 Apr 2024
Machine Age	hrs	Client Info	12660	0	12464
Oil Age	hrs	Client Info	230	0	34
Oil Changed	Client Info		Not Chngd	Not Chngd	Changed
Sample Status			ABNORMAL	ABNORMAL	ABNORMAL

CONTAMINATION

	method	limit/base	current	history1	history2
Fuel	WC Method	>4.0	<1.0	<1.0	<1.0
Water	WC Method	>0.1	NEG	NEG	NEG
Glycol	WC Method		NEG	NEG	NEG

WEAR METALS

	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>45	9	6	8
Chromium	ppm	ASTM D5185m	>2	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>10	5	4	4
Lead	ppm	ASTM D5185m	>5	5	2	3
Copper	ppm	ASTM D5185m	>14	3	2	<1
Tin	ppm	ASTM D5185m	>13	4	2	4
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		<1	0	<1

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m		2	0	3
Barium	ppm	ASTM D5185m		<1	0	2
Molybdenum	ppm	ASTM D5185m		3	2	2
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		9	7	10
Calcium	ppm	ASTM D5185m		2547	2354	2421
Phosphorus	ppm	ASTM D5185m		517	417	430
Zinc	ppm	ASTM D5185m		553	464	517
Sulfur	ppm	ASTM D5185m		3251	2795	2902

CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>200	25	22	27
Sodium	ppm	ASTM D5185m		▲ 271	▲ 264	▲ 275
Potassium	ppm	ASTM D5185m	>20	▲ 42	▲ 34	▲ 41

INFRA-RED

	method	limit/base	current	history1	history2	
Soot %	%	*ASTM D7844		0	0	0
Nitration	Abs/cm	*ASTM D7624	>20	9.4	9.1	9.0
Sulfation	Abs/.1mm	*ASTM D7415	>30	19.4	18.9	19.0

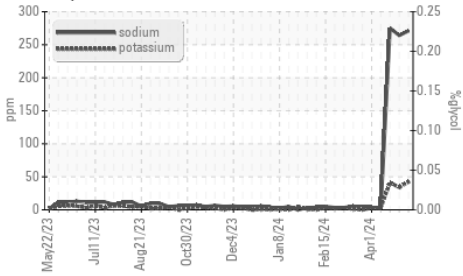
FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	*ASTM D7414	>25	13.9	13.3	12.6
Acid Number (AN)	mg KOH/g	ASTM D8045		0.59	0.35	0.92
Base Number (BN)	mg KOH/g	ASTM D2896	8.0	7.27	7.36	7.40

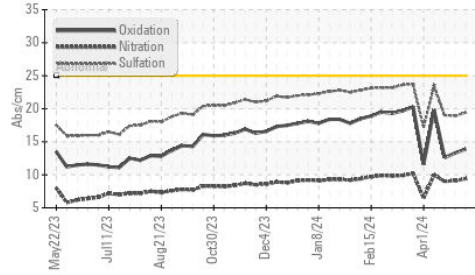


OIL ANALYSIS REPORT

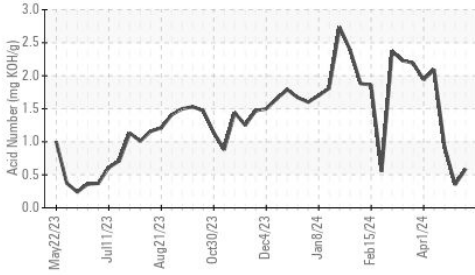
Glycol Contamination



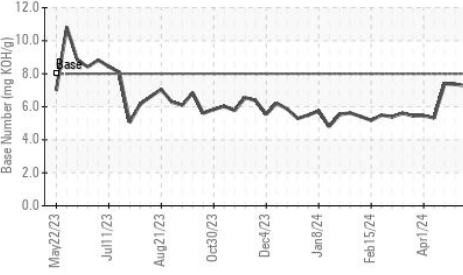
FT-IR (Direct Trend)



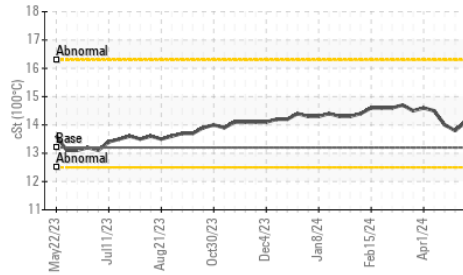
Acid Number



Base Number



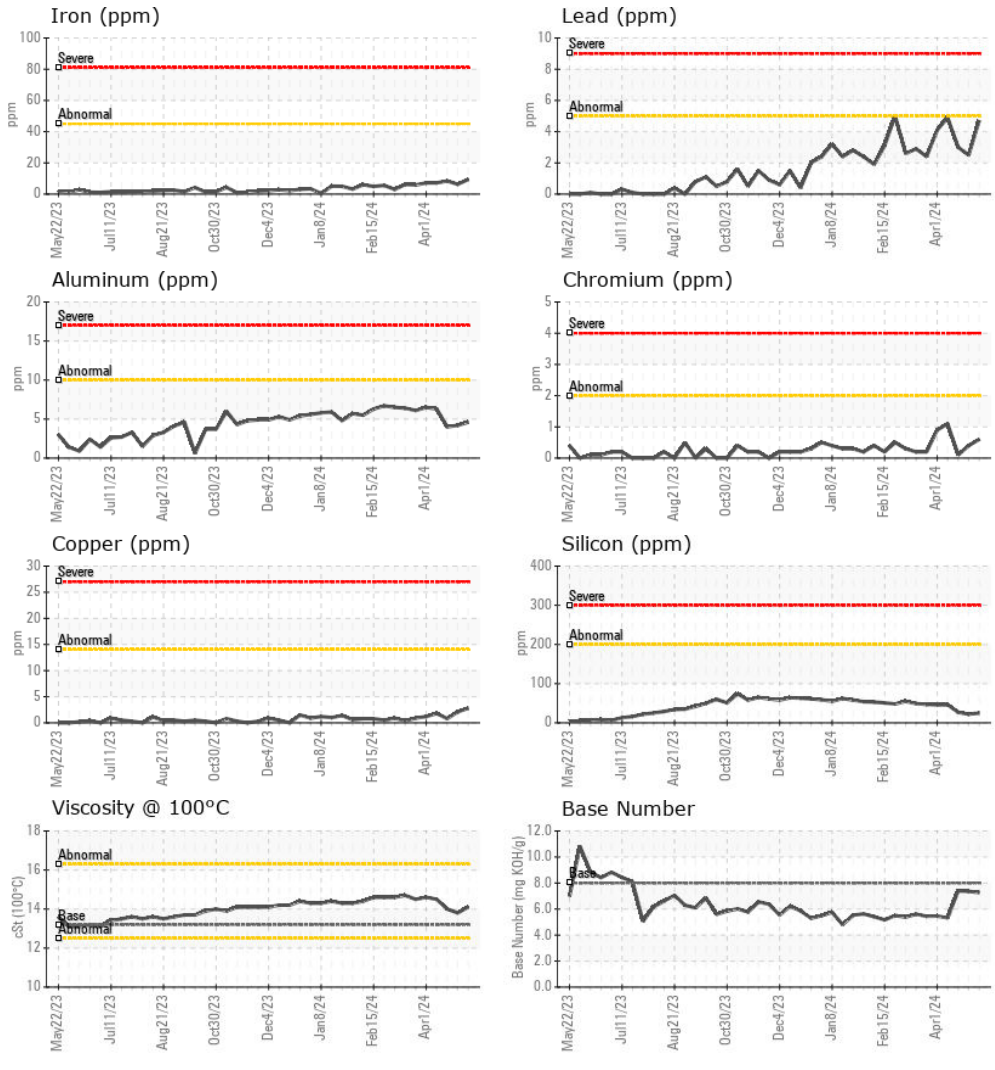
Viscosity @ 100°C



VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	LIGHT	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	13.2	14.1	13.8

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0914327 **Received** : 14 May 2024
Lab Number : **06178984** **Tested** : 15 May 2024
Unique Number : 11030310 **Diagnosed** : 16 May 2024 - Sean Felton
Test Package : MOB 2

OAK GROVE GA
 967 CARL-BETHLEHEM RD
 WINDER, GA
 US 30680
 Contact: ZACK GRAVES
 zack.graves@cubedistrictenergy.com
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 F:

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)