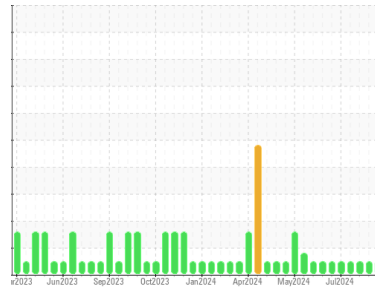




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id
4EK05286

Component
Biogas Engine

Fluid
D-A Lubricant Blue Flame HB-8 40W (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

SAMPLE INFORMATION

method	limit/base	current	history1	history2	
Sample Number	Client Info	WC0880252	WC0880253	WC0880284	
Sample Date	Client Info	17 Jul 2024	15 Jul 2024	12 Jul 2024	
Machine Age	hrs	Client Info	83590	83545	83481
Oil Age	hrs	Client Info	337	292	227
Oil Changed	Client Info	N/A	N/A	Not Chngd	
Sample Status		NORMAL	NORMAL	NORMAL	

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	8	8
Chromium	ppm	ASTM D5185m >2	0	0	0
Nickel	ppm	ASTM D5185m >2	0	0	0
Titanium	ppm	ASTM D5185m	0	0	0
Silver	ppm	ASTM D5185m >5	0	0	0
Aluminum	ppm	ASTM D5185m >10	2	2	2
Lead	ppm	ASTM D5185m >5	0	0	0
Copper	ppm	ASTM D5185m >14	2	2	1
Tin	ppm	ASTM D5185m >13	<1	<1	<1
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	0	0	0
Barium	ppm	ASTM D5185m	0	0	0
Molybdenum	ppm	ASTM D5185m	1	<1	<1
Manganese	ppm	ASTM D5185m	0	<1	0
Magnesium	ppm	ASTM D5185m	7	6	10
Calcium	ppm	ASTM D5185m	2500	2370	2454
Phosphorus	ppm	ASTM D5185m	300	307	335
Zinc	ppm	ASTM D5185m	359	371	406
Sulfur	ppm	ASTM D5185m	4882	4889	5155

CONTAMINANTS

method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m >200	179	156	130
Sodium	ppm	ASTM D5185m	2	2	2
Potassium	ppm	ASTM D5185m >20	0	0	0

INFRA-RED

method	limit/base	current	history1	history2	
Soot %	%	*ASTM D7844	0	0	0
Nitration	Abs/cm	*ASTM D7624 >20	4.3	4.3	4.3
Sulfation	Abs/.1mm	*ASTM D7415 >30	20.6	19.9	18.9

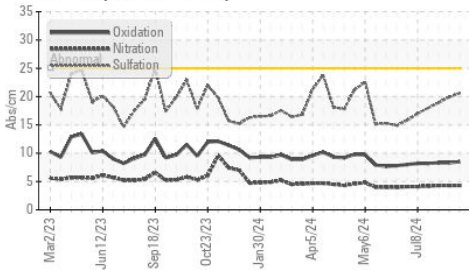
FLUID DEGRADATION

method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	*ASTM D7414 >25	8.5	8.3	8.3
Acid Number (AN)	mg KOH/g	ASTM D8045	1.76	1.79	1.50
Base Number (BN)	mg KOH/g	ASTM D2896 8	4.92	5.45	5.97

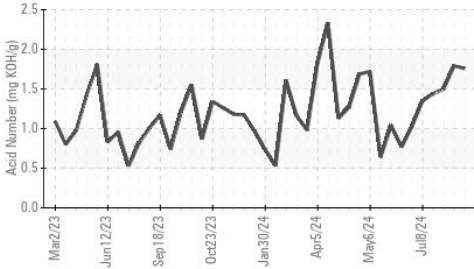


OIL ANALYSIS REPORT

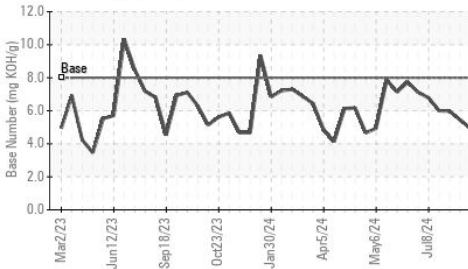
FT-IR (Direct Trend)



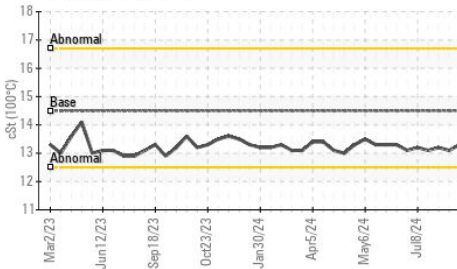
Acid Number



Base Number



Viscosity @ 100°C

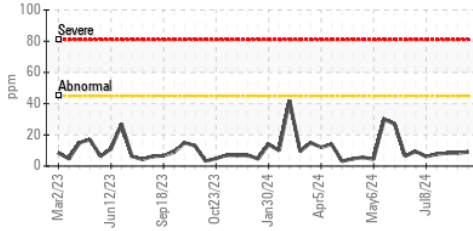


VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	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

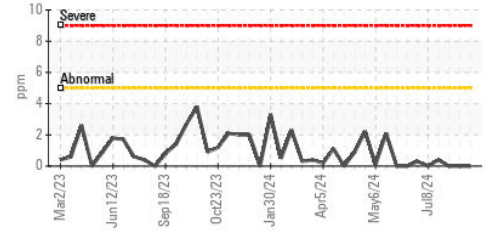
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.5	13.3	13.1

GRAPHS

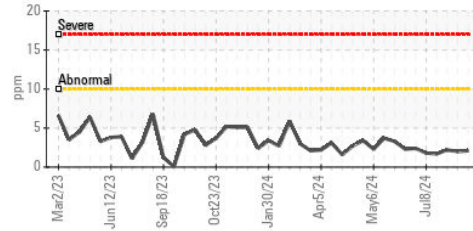
Iron (ppm)



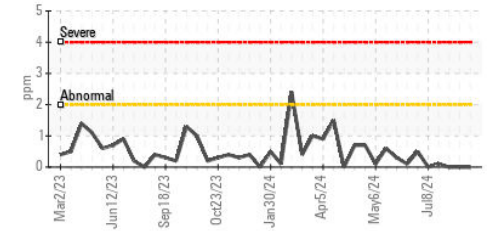
Lead (ppm)



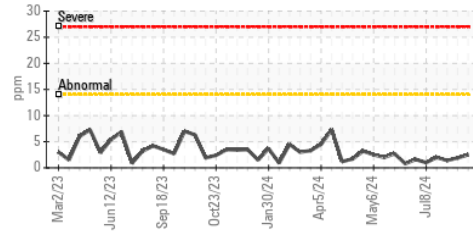
Aluminum (ppm)



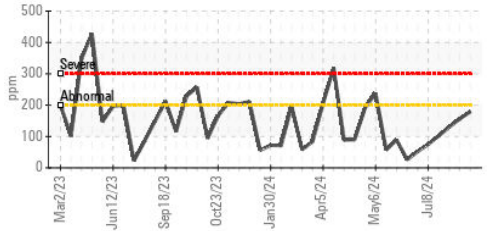
Chromium (ppm)



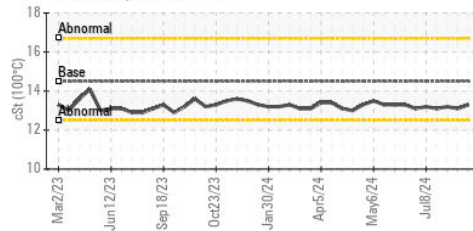
Copper (ppm)



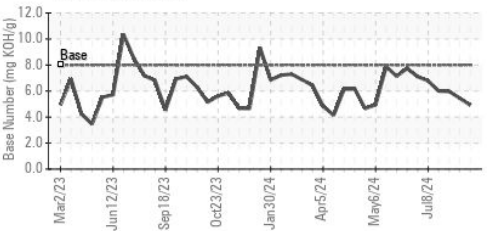
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

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

Sample No. : WC0880252

Lab Number : 06240526

Unique Number : 11129360

Test Package : MOB 2

Received : 18 Jul 2024

Tested : 19 Jul 2024

Diagnosed : 20 Jul 2024 - Don Baldridge

BI-COUNTY

3214 DOVER RD

WOODLAWN, TN

US 37191

Contact: KEVIN WEAVER

kevin.weaver@cubedistrictenergy.com

T:

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)