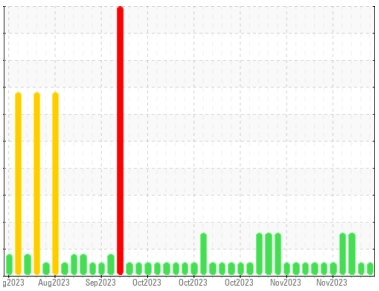
OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Machine Id
CATERPILLAR GM02
Component
Biogas Engine
Fluid
MAHLER Q8 Mahler G8 SAE 40 (--- GAL)

DIAGNOSIS

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0870530**	WC0870533	WC0870535
Sample Date		Client Info		**05 Dec 2023**	01 Dec 2023	29 Nov 2023
Machine Age	hrs	Client Info		**66613**	66523	66475
Oil Age	hrs	Client Info		**90**	0	461
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**NORMAL**	NORMAL	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	**6**	3	14
Chromium	ppm	ASTM D5185m	>2	**<1**	0	<1
Nickel	ppm	ASTM D5185m	>2	**<1**	0	<1
Titanium	ppm	ASTM D5185m		**0**	<1	0
Silver	ppm	ASTM D5185m	>5	**0**	0	0
Aluminum	ppm	ASTM D5185m	>10	**2**	1	4
Lead	ppm	ASTM D5185m	>5	**0**	0	0
Copper	ppm	ASTM D5185m	>14	**<1**	<1	1
Tin	ppm	ASTM D5185m	>13	**<1**	0	3
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**	0	0
Manganese	ppm	ASTM D5185m		**0**	0	<1
Magnesium	ppm	ASTM D5185m		**4**	4	7
Calcium	ppm	ASTM D5185m		**1334**	1346	1378
Phosphorus	ppm	ASTM D5185m		**362**	405	381
Zinc	ppm	ASTM D5185m		**428**	428	459
Sulfur	ppm	ASTM D5185m		**1870**	2013	1995

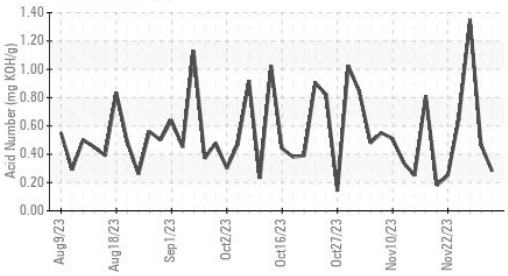
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>200	**75**	18	▲ 239
Sodium	ppm	ASTM D5185m		**0**	0	1
Potassium	ppm	ASTM D5185m	>20	**<1**	2	0

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		**0**	0	0
Nitration	Abs/cm	*ASTM D7624	>20	**4.8**	4.2	5.7
Sulfation	Abs/.1mm	*ASTM D7415	>30	**15.0**	14.5	16.8

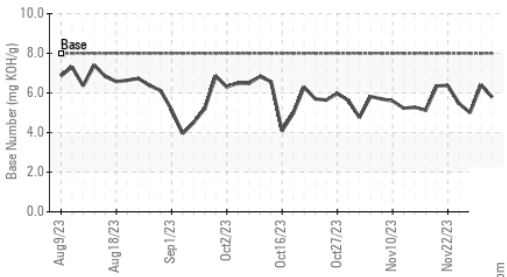
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**9.3**	8.6	11.1
Acid Number (AN)	mg KOH/g	ASTM D8045		**0.28**	0.47	1.35
Base Number (BN)	mg KOH/g	ASTM D2896	8.0	**5.79**	6.41	5.00

OIL ANALYSIS REPORT

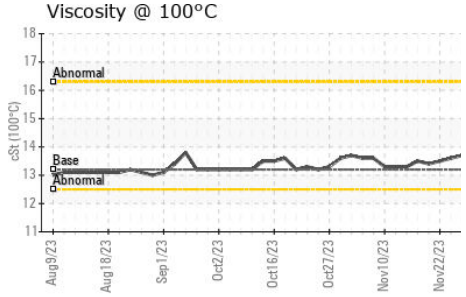
Acid Number



Base Number



Viscosity @ 100°C

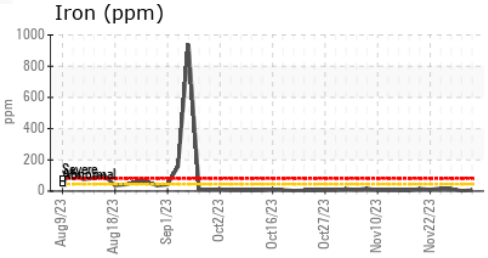


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

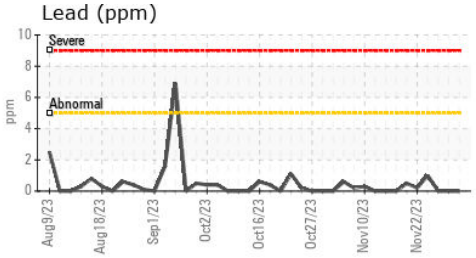
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	13.2	**13.3**	13.2	13.7

GRAPHS

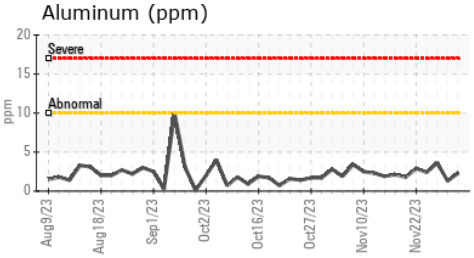
Iron (ppm)



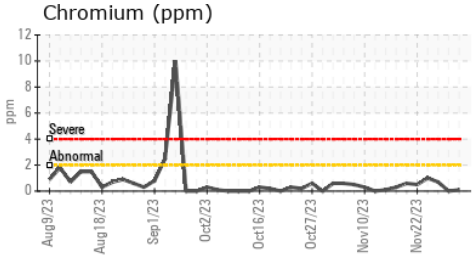
Lead (ppm)



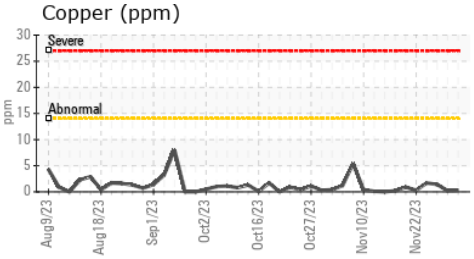
Aluminum (ppm)



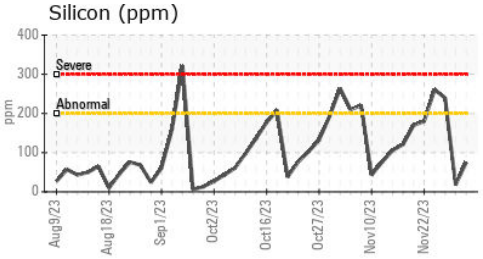
Chromium (ppm)



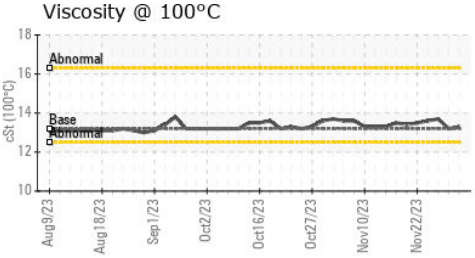
Copper (ppm)



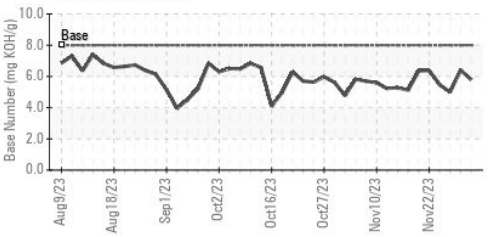
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0870530
Lab Number : 06027202
Unique Number : 10776993
Test Package : MOB 2

Received : 06 Dec 2023
Diagnosed : 08 Dec 2023
Diagnostician : Angela Borella

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)

OAK GROVE KS
1150 E 700TH AVE
ARCADIA, KS
US 66711
Contact: KALEB WEAVER
kaleb.weaver@cubedistrictenergy.com
T:
F: