



OIL ANALYSIS REPORT

WEAR	SEVERE
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL



Machine Id
JENBACHER GM03 (S/N 1144731)
Component
Biogas Engine
Fluid
MAHLER Q8 Mahler G8 SAE 40 (--- GAL)

RECOMMENDATION

We recommend that you drain the oil and perform a filter service on this component if not already done. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0880429	WC0880426	WC0880424
Sample Date		Client Info		12 Apr 2024	04 Apr 2024	27 Mar 2024
Machine Age	hrs	Client Info		50992	50871	50700
Oil Age	hrs	Client Info		465	344	173
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Filter Changed		Client Info		N/A	N/A	N/A
Sample Status				SEVERE	NORMAL	NORMAL

WEAR

The iron level is severe.

Iron	ppm	ASTM D5185m	>20	▲ 50	10	15
Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
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	>15	4	3	4
Lead	ppm	ASTM D5185m	>20	0	0	0
Copper	ppm	ASTM D5185m	>15	1	2	2
Tin	ppm	ASTM D5185m	>5	<1	1	2
Vanadium	ppm	ASTM D5185m		<1	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

There is no indication of any contamination in the oil.

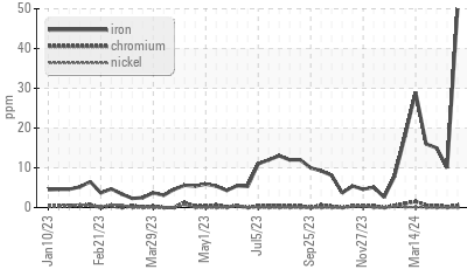
Silicon	ppm	ASTM D5185m	>200	31	45	69
Potassium	ppm	ASTM D5185m	>20	0	0	0
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>2	0.1	0.1	0
Nitration	Abs/cm	*ASTM D7624	>20	7.2	7.3	6.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	17.0	17.2	17.1
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	>.2	NEG	NEG	NEG

FLUID CONDITION

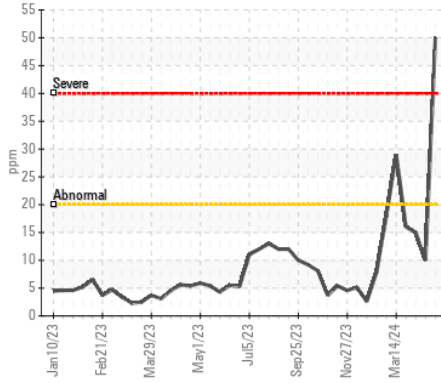
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid.

Sodium	ppm	ASTM D5185m	>20	2	<1	2
Boron	ppm	ASTM D5185m		0	<1	<1
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		<1	<1	<1
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		4	9	9
Calcium	ppm	ASTM D5185m		2255	2353	2224
Phosphorus	ppm	ASTM D5185m		354	421	361
Zinc	ppm	ASTM D5185m		380	487	440
Sulfur	ppm	ASTM D5185m		2235	2794	2555
Oxidation	Abs/.1mm	*ASTM D7414	>25	11.9	12.4	12.1
Acid Number (AN)	mg KOH/g	ASTM D8045		0.46	0.42	0.441
Base Number (BN)	mg KOH/g	ASTM D2896	8.0	8.01	7.55	7.70
Visc @ 100°C	cSt	ASTM D445	13.2	13.2	13.3	13.4

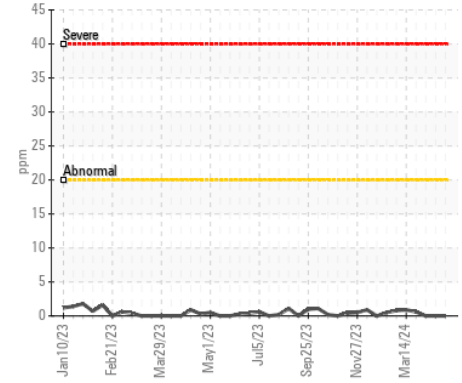
▲ Ferrous Alloys



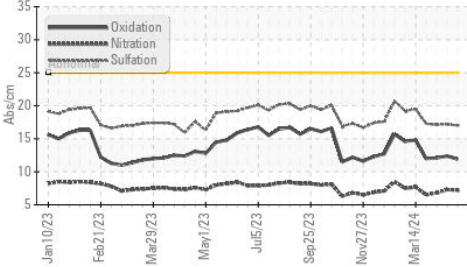
▲ Iron (ppm)



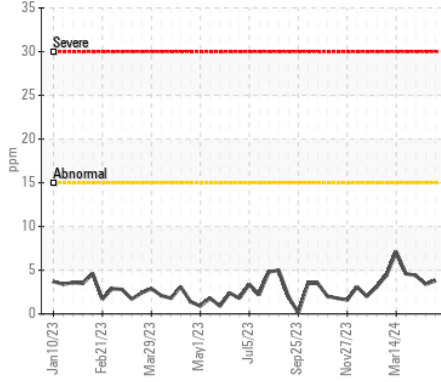
Lead (ppm)



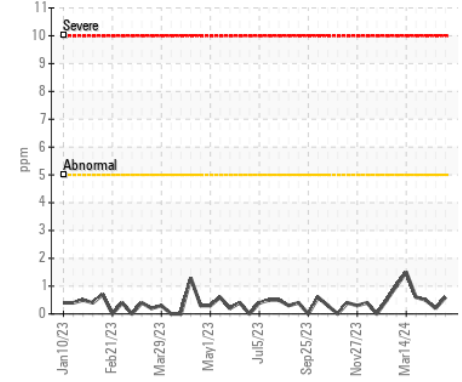
FT-IR (Direct Trend)



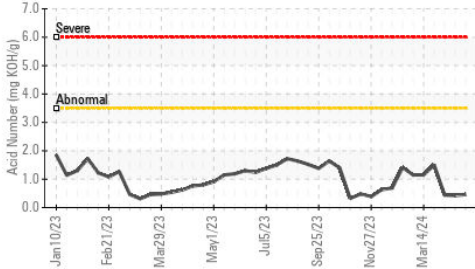
Aluminum (ppm)



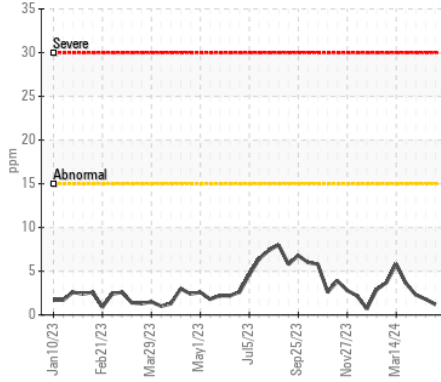
Chromium (ppm)



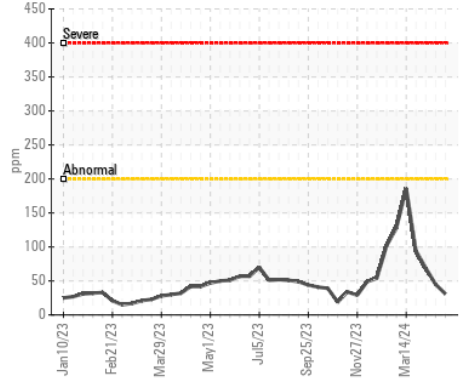
Acid Number



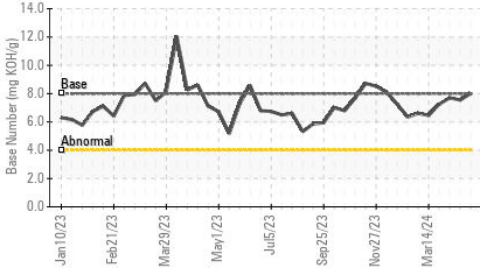
Copper (ppm)



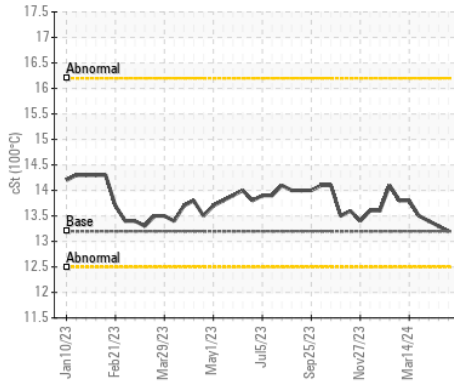
Silicon (ppm)



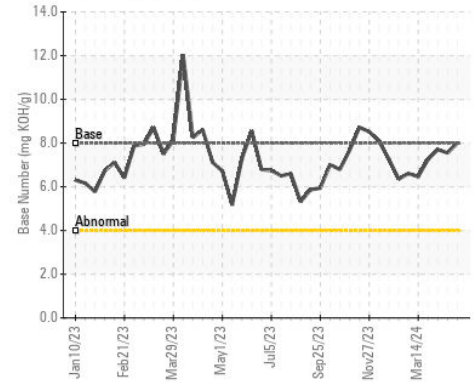
Base Number



Viscosity @ 100°C



Base Number



Certificate L2367

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

Sample No. : WC0880429

Lab Number : 06148884

Unique Number : 10978962

Test Package : MOB 2

Received : 15 Apr 2024

Tested : 16 Apr 2024

Diagnosed : 17 Apr 2024 - Sean Felton

PINE RIDGE

105 BAILEY JESTER RD

GRIFFIN, GA

US 30224

Contact: STEPHEN SAVAGE

stephen.savage@cubedistrictenergy.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)

T:

F: