



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL



Machine Id
JENBACHER GM02 (S/N 1144713)
Component
Biogas Engine
Fluid
MAHLER Q8 Mahler G8 SAE 40 (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0880402	WC0880434	WC0880428
Sample Date		Client Info		25 Apr 2024	19 Apr 2024	12 Apr 2024
Machine Age	hrs	Client Info		50397	50265	50097
Oil Age	hrs	Client Info		599	467	299
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				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>20	8	5	8
Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>15	4	3	3
Lead	ppm	ASTM D5185m	>20	0	0	0
Copper	ppm	ASTM D5185m	>15	4	2	4
Tin	ppm	ASTM D5185m	>5	3	4	2
Vanadium	ppm	ASTM D5185m		0	0	<1
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.

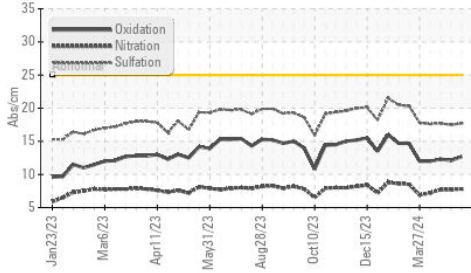
Silicon	ppm	ASTM D5185m	>200	71	71	70
Potassium	ppm	ASTM D5185m	>20	5	7	5
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>2	0.1	0	0
Nitration	Abs/cm	*ASTM D7624	>20	7.8	7.7	7.7
Sulfation	Abs/.1mm	*ASTM D7415	>30	17.7	17.5	17.7
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

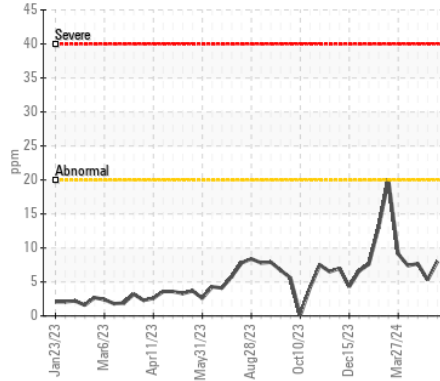
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>20	14	13	13
Boron	ppm	ASTM D5185m		0	0	0
Barium	ppm	ASTM D5185m		0	<1	0
Molybdenum	ppm	ASTM D5185m		<1	<1	<1
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		8	9	5
Calcium	ppm	ASTM D5185m		2318	2341	2265
Phosphorus	ppm	ASTM D5185m		405	421	354
Zinc	ppm	ASTM D5185m		457	487	392
Sulfur	ppm	ASTM D5185m		2736	2853	2389
Oxidation	Abs/.1mm	*ASTM D7414	>25	12.7	12.1	12.3
Acid Number (AN)	mg KOH/g	ASTM D8045		0.83	0.84	0.65
Base Number (BN)	mg KOH/g	ASTM D2896	8.0	6.19	6.19	6.58
Visc @ 100°C	cSt	ASTM D445	13.2	13.5	13.6	13.5

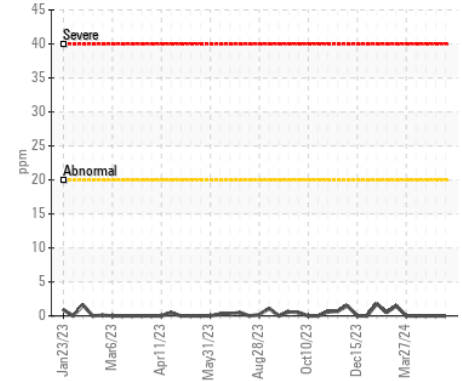
FT-IR (Direct Trend)



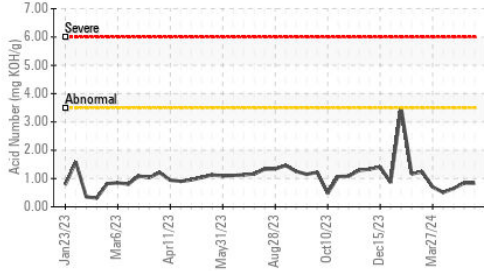
Iron (ppm)



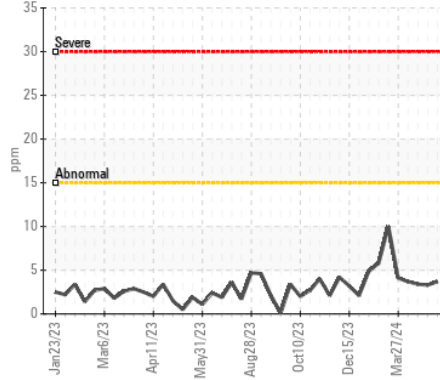
Lead (ppm)



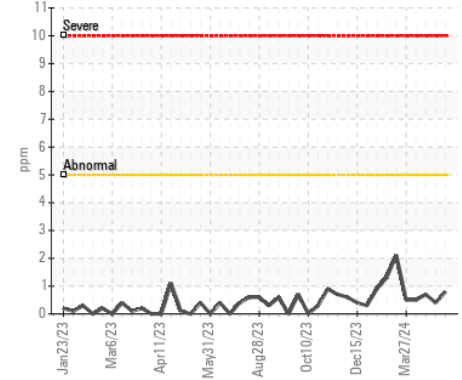
Acid Number



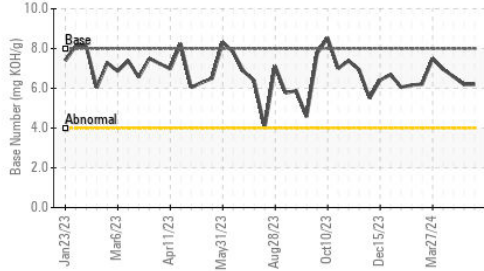
Aluminum (ppm)



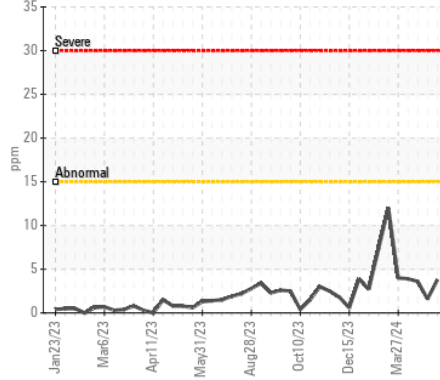
Chromium (ppm)



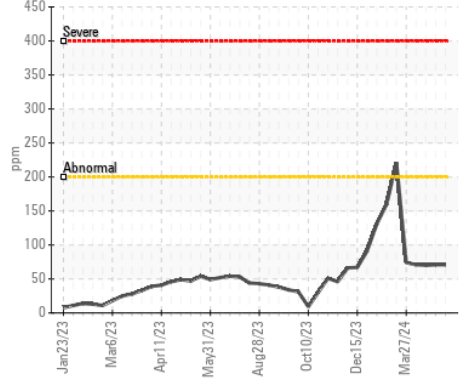
Base Number



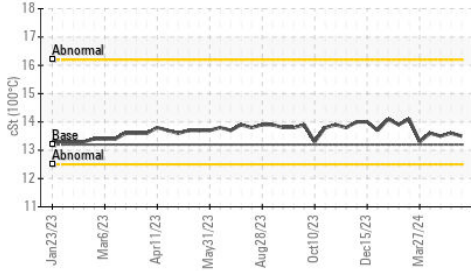
Copper (ppm)



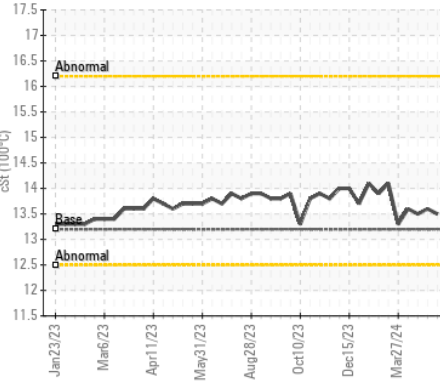
Silicon (ppm)



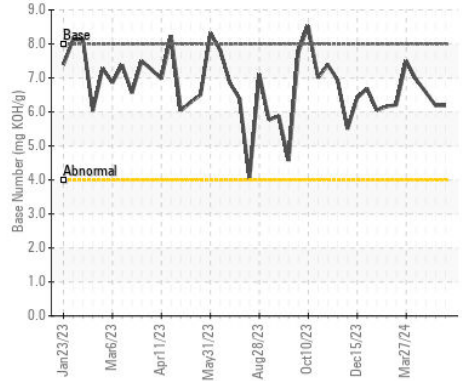
Viscosity @ 100°C



Viscosity @ 100°C



Base Number



Certificate L2367

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

Sample No. : WC0880402

Lab Number : 06161690

Unique Number : 10997113

Test Package : MOB 2

Received : 26 Apr 2024

Tested : 29 Apr 2024

Diagnosed : 30 Apr 2024 - Sean Felton

PINE RIDGE

105 BAILEY JESTER RD

GRIFFIN, GA

US 30224

Contact: STEPHEN SAVAGE

stephen.savage@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)