

OIL ANALYSIS REPORT

Machine Id

LGS00178

Biogas Engine

Fluid MAHLER Q8 Mahler G8 SAE 40 (141 GAL)

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.

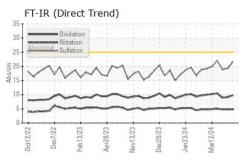
Fluid Condition

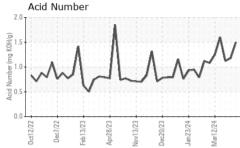
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

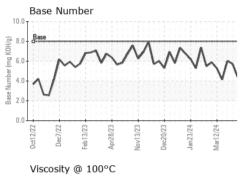
SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0880266	WC0880271	WC0880273
Sample Date		Client Info		16 Apr 2024	11 Apr 2024	05 Apr 2024
Machine Age	hrs	Client Info		0	66928	66849
Oil Age	hrs	Client Info		300	173	94
Oil Changed		Client Info		Not Changd	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	N	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	2	<1	2
Chromium	ppm	ASTM D5185m		0	<1	0
Nickel	ppm	ASTM D5185m	>2	0	<1	<1
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>10	3	2	2
Lead	ppm	ASTM D5185m	>5	2	2	<1
Copper	ppm	ASTM D5185m	>14	8	5	3
Tin	ppm	ASTM D5185m	>13	2	2	<1
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		0	<1	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		0	<1	0
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		4	6	5
Calcium	ppm	ASTM D5185m		2191	2356	2176
Phosphorus	ppm	ACTM DE10Em				
Zinc		ASTM D5185m		343	419	341
200	ppm	ASTM D5185m		343 375	419 480	341 414
Sulfur						
-	ppm ppm	ASTM D5185m	limit/base	375	480	414
Sulfur	ppm ppm	ASTM D5185m ASTM D5185m	limit/base	375 4545	480 4562	414 3699
Sulfur CONTAMINANTS	ppm ppm	ASTM D5185m ASTM D5185m method		375 4545 current	480 4562 history1	414 3699 history2
Sulfur CONTAMINANTS Silicon	ppm ppm	ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m		375 4545 current 147	480 4562 history1 118	414 3699 history2 76
Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	>200	375 4545 current 147 2	480 4562 history1 118 0	414 3699 history2 76 2
Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m Method *ASTM D7844	>200 >20	375 4545 current 147 2 0	480 4562 history1 118 0 1	414 3699 history2 76 2 0
Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m method	>200 >20	375 4545 current 147 2 0 current	480 4562 history1 118 0 1 1 history1	414 3699 history2 76 2 0 0 history2
Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m Method *ASTM D7844	>200 >20 limit/base	375 4545 current 147 2 0 current 0	480 4562 history1 118 0 1 1 history1 0	414 3699 history2 76 2 0 history2 0
Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624	>200 >20 limit/base	375 4545 current 147 2 0 current 0 4.8	480 4562 history1 118 0 1 history1 0 4.8	414 3699 history2 76 2 0 history2 0 4.8
Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624	>200 >20 limit/base >20 >30	375 4545 current 147 2 0 current 0 4.8 21.7	480 4562 history1 118 0 1 history1 0 4.8 19.3	414 3699 history2 76 2 0 history2 0 4.8 18.9
Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm % Abs/cm Abs/cm Abs/1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7415	>200 >20 limit/base >20 >30 limit/base	375 4545 current 147 2 0 current 0 4.8 21.7 current	480 4562 history1 118 0 1 history1 0 4.8 19.3 history1	414 3699 history2 76 2 0 history2 0 4.8 18.9 history2

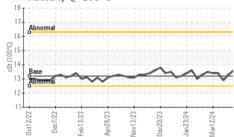


OIL ANALYSIS REPORT









VISUAL		method				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 PROPERT	IES	method	limit/base	current	history1	history2
/isc @ 100°C	cSt	ASTM D445	13.2	13.6	13.3	12.9
GRAPHS			-			
Iron (ppm)				Lead (ppm)		
Tabaaaaaaaaaaaaaaaaaaaaaa			10		111111111111111111111111111111111111111	
Severe			3	\$		
	1		E E	Abnormal		
Abnormal	11		- 4	•	teri Atenti	1 -
	1h				A 11 - F	.JM
23	3	23				24
Oct12/22 Dec7/22 Feb13/23 Apr28/23	Nov13/23	Dec20/23 Jan23/24 Mar12/24	3	0ct12/22 Dec7/22 Feb13/23	Apr28/23 Nov13/23 Dec20/23	Jan 23/24 Mar 1 2/24
Aluminum (ppm)	2		88	Chromium (p		7 2
Severe			5	⁵ T 30000000000000000		
-			4	+ Severe		
Abnormal			udd,			
			Ē2	2 - Abnormal	*****	
m	1-	~~	~	1		•
23	53	23				
Oct12/22 Dec7/22 Feb13/23 Apr28/23	Nov13/23	Dec20/23 Jan23/24 Mar12/24		0ct12/22 Dec7/22 -eb13/23	Apr28/23 Nov13/23 Dec20/23	2
br ep Ge ct				9 G H	Id N N	an23
	2	Ja Mi		- L		Jan23/24 Mar12/24
Copper (ppm)	2	ν η ο	E 1999-99 400	Silicon (ppm)		Jan2: Mar1:
Copper (ppm)	2		400	Silicon (ppm)		Jan 2: Mar1 1
Copper (ppm)	2		400	Silicon (ppm)		Jan2: Mar13
Copper (ppm)	2		400	Silicon (ppm)		Jan2.
Copper (ppm)			400	Silicon (ppm)		Jan2.
Copper (ppm)	h	\sim	400 300 토 200 시 100	Silicon (ppm)	M	M
Copper (ppm)	h	\sim	400 300 토 200 시 100	Silicon (ppm)	M	M
Ocerizazz Generation Heinigram	h	Dec20/23 + De Jan/23/24 + Jan/23/24 + Ja	400 300 토 200 시 100	Silicon (ppm)	Apr28/23	Jan23/24 Van2 Mart 2/24 Mart
Copper (ppm)	h	\sim	400 300 토 200 100	Silicon (ppm)	Apr28/23	\mathcal{M}
Copper (ppm)	h	\sim	400 300 토 200 100	Silicon (ppm)	Apr28/23	\mathcal{M}
Copper (ppm)	h	\sim	400 300 토 200 100	Silicon (ppm)	Apr28/23	\mathcal{M}
Copper (ppm)	h	\sim	400 300 토 200 100	Silicon (ppm)	Apr28/23	\mathcal{M}
Copper (ppm)	h	\sim	400 300 토 200 100	Silicon (ppm)	Apr28/23	\mathcal{M}
Copper (ppm)	h	\sim	400 300 100 100 0 100 100 0 100 0 100 0 0 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Silicon (ppm)	Apr28/23	M
Copper (ppm)	Nov1323	\sim	400 300 100 100 (0)h0y 6.0 900 b 0.0 900 b 0.0 9000 b 0.0 9000 b 0.0 9000 b 0.0 9000 b 0.0 9000 b 0.0 9000	Silicon (ppm)	Apr28/23	\mathcal{M}

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 **BI-COUNTY** Sample No. : WC0880266 3214 DOVER RD Received : 19 Apr 2024 Lab Number : 06154652 Tested : 23 Apr 2024 WOODLAWN, TN Unique Number : 10990075 Diagnosed : 23 Apr 2024 - Sean Felton US 37191 Test Package : MOB 2 Contact: KEVIN WEAVER Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. kevin.weaver@cubedistrictenergy.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: F:

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) Report Id: BICWOOTN [WUSCAR] 06154652 (Generated: 04/23/2024 15:40:34) Rev: 1

Submitted By: ?

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