

OIL ANALYSIS REPORT



NORMAL

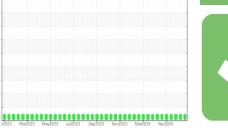


Machine Id JENBACHER GM01 (S/N 1144716)

Biogas Engine Fluid

MAHLER Q8 Mahler G8 SAE 40 (--- GAL)

SAMPLE INFORMATION method





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

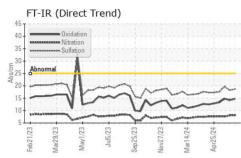
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

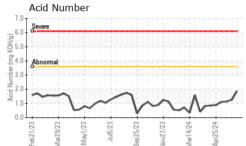
		method	iimi/base	current	riistory i	nistory2
Sample Number		Client Info		WC0852951	WC0852948	WC0852946
Sample Date		Client Info		29 May 2024	20 May 2024	15 May 2024
Machine Age	hrs	Client Info		52737	52534	52435
Oil Age	hrs	Client Info		1707	1504	1405
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
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CONTAMINATION	1	method	limit/base	current	history1	history2
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>20	7	7	8
Chromium	ppm	ASTM D5185m	>5	1	<1	2
Nickel	ppm	ASTM D5185m	>2	0	0	<1
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>5	0	0	<1
Aluminum	ppm	ASTM D5185m	>15	3	2	4
Lead	ppm	ASTM D5185m	>20	<1	0	1
Copper	ppm	ASTM D5185m	>15	3	2	4
Tin	ppm	ASTM D5185m	>5	6	4	5
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		0	0	0
Barium	ppm	ASTM D5185m		0	0	<1
Molybdenum	ppm	ASTM D5185m		0	<1	1
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		9	8	9
Calcium	ppm	ASTM D5185m		2469	2418	0040
Phosphorus				2405	2410	2346
Zinc	ppm	ASTM D5185m		454	426	2346 393
ZINC	ppm ppm	ASTM D5185m ASTM D5185m				393 501
Sulfur				454	426	393
	ppm	ASTM D5185m	limit/base	454 512	426 434	393 501
Sulfur	ppm	ASTM D5185m ASTM D5185m		454 512 3058	426 434 2978	393 501 2611
Sulfur CONTAMINANTS	ppm ppm	ASTM D5185m ASTM D5185m method		454 512 3058 current	426 434 2978 history1	393 501 2611 history2
Sulfur CONTAMINANTS Silicon	ppm ppm ppm	ASTM D5185m ASTM D5185m method ASTM D5185m	>200	454 512 3058 current 76	426 434 2978 history1 64	393 501 2611 history2 76
Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m	>200 >20	454 512 3058 current 76 1	426 434 2978 history1 64 12	393 501 2611 history2 76 <1
Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m	>200 >20 >20	454 512 3058 current 76 1 0	426 434 2978 history1 64 12 5	393 501 2611 history2 76 <1 2
Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method	>200 >20 >20 limit/base	454 512 3058 current 76 1 0 current	426 434 2978 history1 64 12 5 history1	393 501 2611 history2 76 <1 2 history2
Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844	>200 >20 >20 limit/base >2	454 512 3058 current 76 1 0 current 0	426 434 2978 history1 64 12 5 5 history1 0	393 501 2611 history2 76 <1 2 history2 0
Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm % Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624	>200 >20 >20 limit/base >2 >20	454 512 3058 current 76 1 0 current 0 8.1	426 434 2978 history1 64 12 5 history1 0 8.1	393 501 2611 history2 76 <1 2 history2 0 7.6
Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm % Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624	>200 >20 >20 limit/base >2 >20 >20 >30	454 512 3058 current 76 1 0 current 0 8.1 18.7	426 434 2978 history1 64 12 5 history1 0 8.1 18.2	393 501 2611 history2 76 <1 2 history2 0 7.6 19.7
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 D7844 *ASTM D7624 *ASTM D7624 *ASTM D7415	>200 >20 >20 limit/base >2 >20 >30	454 512 3058 current 76 1 0 current 0 8.1 18.7 current	426 434 2978 history1 64 12 5 history1 0 8.1 18.2 history1	393 501 2611 history2 76 <1 2 history2 0 7.6 19.7 history2
Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Oxidation	ppm ppm ppm ppm ppm ppm ppm kbs/ thm the the the the the the the the the the	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7415	>200 >20 >20 limit/base >2 >20 >30	454 512 3058 current 76 1 0 current 0 8.1 18.7 current 14.7	426 434 2978 history1 64 12 5 history1 0 8.1 18.2 history1 14.2	393 501 2611 history2 76 <1 2 history2 0 7.6 19.7 history2 14.8

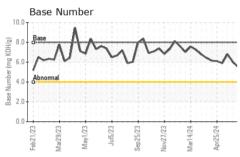
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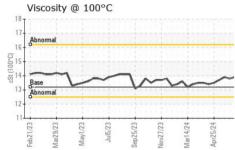


OIL ANALYSIS REPORT









VISUAL		method	limit/base	current	history1	histor
Vhite Metal	scalar		NONE	NONE	NONE	NONE
ellow Metal	scalar		NONE	NONE	NONE	NONE
recipitate	scalar		NONE	NONE	NONE	NONE
ilt Jebris	scalar		NONE	NONE NONE	NONE	NONE
and/Dirt	scalar scalar		NONE	NONE	NONE	NONE
Appearance	scalar		NORML	NORML	NORML	NORM
Odor	scalar		NORML	NORML	NORML	NORMI
Emulsified Water	scalar	*Visual	>.2	NEG	NEG	NEG
ree Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE		method	limit/base	current	history1	histor
/isc @ 100°C	cSt	ASTM D445	13.2	13.9	13.8	13.9
GRAPHS Iron (ppm)				Lead (ppm)		
			50	Severe		1000000000
Severe 	a dan ba		40	+ 0		
Abnormal			³⁰ 20	Abnormal		
	2		10			
23		23 54 53	+ (23	23
Feb 2 1/23 Mar 2 9/23 May 1/23	Jul5/23 Sep25/23	Nov27/23 Mar14/24	47/c7JdH	Feb21/23 Mar29/23 May1/23	Jul5/23 Sep25/23	Nov27/23 Mar14/24 Apr25/24
Aluminum (ppr		~ < `	3	Chromium (p	**	~ ~ ~
200200200	Therefore		12	Savara		
Severe			3			
Abnormal			E e	0		
	-		2			
		23 23				24
Feb21/23 Mar29/23 May1/23	Jul5/23 Sep 25/23	Nov27/23 Mar14/24	+7/c7JdH	Feb21/23 Mar29/23 May1/23	Jul5/23 Sep25/23	Nov27/23 Mar14/24 Apr25/24
Copper (ppm)	63	~ ~ `	-	Silicon (ppm)	03	~ ~ ~
			500	Savara		
Severe			400	- Bevere		
Abnormal			³⁰⁰ ق	Abnormal		
			100			
		\sim	~~			~
Feb 21/23 Mar 29/23 May 1/23	Jul5/23 Sep25/23	Nov27/23 Mar14/24	47/c7/d4	Feb 21/23 Mar 29/23 May 1/23	Jul5/23 Sep 25/23	Nov27/23 Mar14/24 Apr25/24
	60	M ₂	A		0	Mi. Ap
Viscosity @ 100				Base Number		gaaaapaaaap
Abnormal			(B/H0) 8.0 (B/H0) 6.0 (B/H0) 4.0 Base Mmm 4.0	Base	A	~
	_		ළි 6.0 ක		~~~	-
Base Abnormal		and a state of the	quint 4.0			
			82.0 80			
Feb21/23 - Mar29/23 - May1/23 -	Jul5/23 -	Mov27/23 - Mar14/24 -	+ 0.0	Feb21/23	Jul5/23 -	Nov27/23 + Mar14/24 + Apr25/24 +
eb 2 ar 2 Aay	Jul p2	ar1	Zid	eb 2 ar 2.	Jul p2	ar1- pr2!

PINE RIDGE Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. : WC0852951 105 BAILEY JESTER RD Received : 30 May 2024 Lab Number : 06195616 Tested : 31 May 2024 GRIFFIN, GA Unique Number : 11057739 Diagnosed : 01 Jun 2024 - Don Baldridge US 30224 Test Package : MOB 2 Contact: STEPHEN SAVAGE Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. stephen.savage@cubedistrictenergy.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F:

Report Id: PINGRI [WUSCAR] 06195616 (Generated: 06/01/2024 11:25:12) Rev: 1

Contact/Location: STEPHEN SAVAGE - PINGRI

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