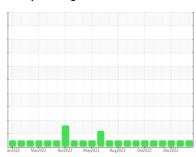


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



LGS00178

Component_

Biogas Engine

Q8 G8 MAHLER SAE 40 (141 GAL)

DIAGNOSIS

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.

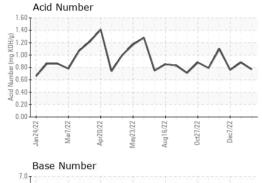
Fluid Condition

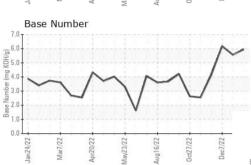
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

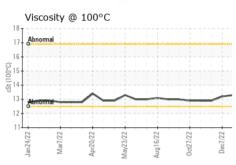
			TOTE ADIEUTE INNEY	022 Aug2022 Oct2022 [Dec2022	
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0660867	WC0660865	WC0660863
Sample Date		Client Info		17 Jan 2023	14 Dec 2022	07 Dec 2022
Machine Age	hrs	Client Info		59799	59114	58955
Oil Age	hrs	Client Info		110	282	595
Oil Changed		Client Info		N/A	Changed	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATIO	V	method	limit/base	current	history1	history2
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>45	3	8	4
Chromium	ppm	ASTM D5185m	>2	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	0	<1
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>5	0	0	<1
Aluminum	ppm	ASTM D5185m	>10	2	3	3
Lead	ppm	ASTM D5185m	>5	1	<1	<1
Copper	ppm	ASTM D5185m	>14	1	2	1
Tin	ppm	ASTM D5185m	>13	<1	2	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 0	history1 0	history2 <1
	ppm		limit/base			
Boron		ASTM D5185m	limit/base	0	0	<1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	0 0	0	<1 0
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 <1	0 0 <1	<1 0 <1
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 <1 <1	0 0 <1 <1	<1 0 <1 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 <1 <1 6	0 0 <1 <1 5	<1 0 <1 <1 8
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 <1 <1 6 2219	0 0 <1 <1 5 2098	<1 0 <1 <1 8 1994
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 <1 <1 6 2219 426	0 0 <1 <1 5 2098 394	<1 0 <1 <1 8 1994 352
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 <1 <1 6 2219 426 450	0 0 <1 <1 5 2098 394 436	<1 0 <1 <1 8 1994 352 421
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		0 0 <1 <1 6 2219 426 450 3463	0 0 <1 <1 5 2098 394 436 4115	<1 0 <1 <1 8 1994 352 421 2950
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base	0 0 <1 <1 6 2219 426 450 3463	0 0 <1 <1 5 2098 394 436 4115 history1	<1 0 <1 <1 8 1994 352 421 2950 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base	0 0 <1 <1 6 2219 426 450 3463 current	0 0 <1 <1 5 2098 394 436 4115 history1	<1 0 <1 <1 8 1994 352 421 2950 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >200	0 0 <1 <1 6 2219 426 450 3463 current 53 <1	0 0 <1 <1 5 2098 394 436 4115 history1 115 2	<1 0 <1 <1 8 1994 352 421 2950 history2 54
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >200 >20	0 0 <1 <1 6 2219 426 450 3463 current 53 <1	0 0 <1 <1 5 2098 394 436 4115 history1 115 2	<1 0 <1 <1 8 1994 352 421 2950 history2 54 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >200 >20 limit/base	0 0 <1 <1 <1 6 2219 426 450 3463 current 53 <1 2 current	0 0 <1 <1 5 2098 394 436 4115 history1 115 2 0 history1	<1 0 <1 <1 8 1994 352 421 2950 history2 54 2 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method *ASTM D5185m *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D5185m *ASTM D5185m	limit/base >200 >20 limit/base	0 0 <1 <1 <1 6 2219 426 450 3463 current 53 <1 2 current 0	0 0 <1 <1 5 2098 394 436 4115 history1 115 2 0 history1 0.1	<1 0 <1 <1 8 1994 352 421 2950 history2 54 2 0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base >200 >20 limit/base >20	0 0 <1 <1 <1 6 2219 426 450 3463 current 53 <1 2 current 0 5.0	0 0 <1 <1 5 2098 394 436 4115 history1 115 2 0 history1 0.1 5.6	<1 0 <1 8 1994 352 421 2950 history2 54 2 0 history2 0.1 6.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method *ASTM D7844 *ASTM D7624 *ASTM D76145	limit/base >200 limit/base >20	0 0 <1 <1 <1 6 2219 426 450 3463 current 53 <1 2 current 0 5.0 15.9	0 0 <1 <1 5 2098 394 436 4115 history1 115 2 0 history1 0.1 5.6 19.8	<1 0 <1 8 1994 352 421 2950 history2 54 2 0 history2 0.1 6.1 17.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624 *ASTM D7415 method	limit/base >200 >20 limit/base >20 >30 limit/base	0 0 <1 <1 <1 6 2219 426 450 3463 current 53 <1 2 current 0 5.0 15.9 current	0 0 <1 <1 5 2098 394 436 4115 history1 115 2 0 history1 0.1 5.6 19.8 history1	<1 0 <1 1 8 1994 352 421 2950 history2 54 2 0 history2 0.1 6.1 17.1 history2



OIL ANALYSIS REPORT



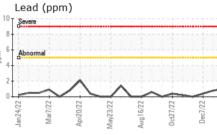


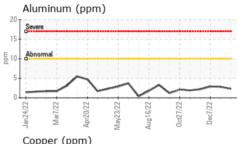


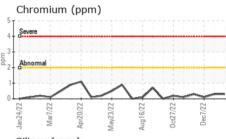
VISUAL		method				history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	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

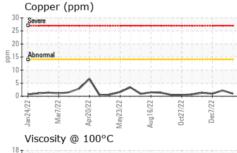
FLUID PROPER	RIIES	method	limit/base		history1	history2
Visc @ 100°C	cSt	ASTM D445		13.1	13.3	13.2

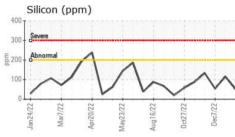
Iror	ppm (ppm	1)					
Sever	e						
		1 1 1					
Abno	rmal						
40							
20		_					
2	2		2		2	2	_
Jan24/2	Mar7/22	Apr20/2	23/2	Aug16/27)ct27/2	Dec7/22	
Jan	Ž	Арт	May23/	Aug	Oct	Ö	
Alur	minum	(ppm)				

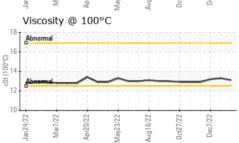


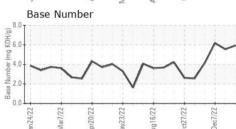
















Certificate L2367

Test Package : MOB 2

Laboratory Sample No. Lab Number **Unique Number**

: 05744268

: WC0660867 : 10298867

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 19 Jan 2023 : 23 Jan 2023 Diagnosed Diagnostician : Sean Felton

BI-COUNTY 3214 DOVER RD WOODLAWN, TN US 37191

Contact: KEVIN WEAVER kevin.weaver@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)

Report Id: BICWOOTN [WUSCAR] 05744268 (Generated: 08/31/2023 11:02:27) Rev: 1

Contact/Location: KEVIN WEAVER - BICWOOTN

T:

F: