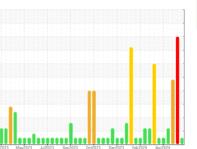


OIL ANALYSIS REPORT

Sample Rating Trend









Grand Blanc CAT 4 GBLM04BE

Biogas Engine

CHEVRON HDAX 9500 GAS ENGINE OIL 40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: 200hr Oil Sample)

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

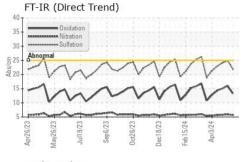
Fluid Condition

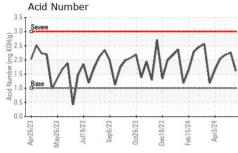
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

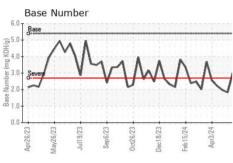
SAMPLE INFORMATION method limit base current history1 history2 Sample Date Client Info WC0905721 HS AP7 2024 48 AP 2024 48	S LIVOINE OIL 40 (-	J.,					
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 69698 69243 69082 Oil Age hrs Client Info 231 950 795 Oil Changed Client Info Changed NoRMAL SEVERE SEVERE CONTAMINATION method limit base current history1 history2 Fuel WC Method >4.0 <1.0 <1.0 <1.0 Water WC Method >.11 NEG NEG NEG Glycol WC Method >.11 NEG NEG NEG WEAR METALS method limit base current history1 history2 Iron ppm ASTM D5185m >15 4 8 6 Chromium ppm ASTM D5185m >4 0 <1 1 Nickel ppm ASTM D5185m 0 <1 0 0 Silver ppm ASTM D5185m >6 1 3 2 Lead <td< th=""><th>Sample Number</th><th></th><th>Client Info</th><th></th><th>WC0905721</th><th>WC0905701</th><th>WC0905672</th></td<>	Sample Number		Client Info		WC0905721	WC0905701	WC0905672
Oil Age hrs Client Info 231 950 795 Oil Changed Sample Status Client Info Changed Changed Changed Changed Not Changed Sample Status NoRMAL SEVERE SEVERE SEVERE CONTAMINATION method limit/base current history1 history2 Fuel WC Method >4.0 <1.0	Sample Date		Client Info		13 May 2024	24 Apr 2024	18 Apr 2024
Oil Changed Sample Status Client Info Changed NORMAL Changed SEVERE Not Changed SEVERE CONTAMINATION method limit/base current history1 history2 Fuel WC Method >4.0 <1.0	Machine Age	hrs	Client Info		69698	69243	69082
Sample Status	Oil Age	hrs	Client Info		231	950	795
Fuel	Oil Changed		Client Info		Changed	Changed	Not Changd
Fuel	Sample Status				NORMAL	SEVERE	SEVERE
Water WC Method >.11 NEG NEG NEG Glycol WC Method Imili/base current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >15 4 8 6 Chromium ppm ASTM D5185m 0 <1 <1 NO Nickel ppm ASTM D5185m 0 <1 0 0 Silver ppm ASTM D5185m 0 <1 0 0 Aluminum ppm ASTM D5185m >6 1 3 2 Lead ppm ASTM D5185m >9 <1 3 2 Copper ppm ASTM D5185m >6 <1 2 3 Tin ppm ASTM D5185m >6 <1 2 3 Vanadium ppm ASTM D5185m 0 0 0 0	CONTAMINATION	V	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>.11	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >4 0 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>15	4	8	6
Titanium	Chromium	ppm	ASTM D5185m	>4	0	<1	<1
Silver	Nickel	ppm				0	0
Aluminum ppm ASTM D5185m >6 1 3 2 Lead ppm ASTM D5185m >9 <1		ppm			-		
Lead ppm ASTM D5185m >9 <1	Silver	ppm	ASTM D5185m				
Copper ppm ASTM D5185m >6 <1 2 3 Tin ppm ASTM D5185m 4 1 2 3 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 35 2 4 Barium ppm ASTM D5185m 0 0 1 Molybdenum ppm ASTM D5185m 2 3 2 Manganese ppm ASTM D5185m 2 3 2 Manganese ppm ASTM D5185m 15 12 14 Calcium ppm ASTM D5185m 1872 1965 1984 Phosphorus ppm ASTM D5185m 392 347 360 Sulfur ppm ASTM D5185m 3937 3705 3698 </td <td>Aluminum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>6</td> <th>1</th> <td></td> <td></td>	Aluminum	ppm	ASTM D5185m	>6	1		
Tin	Lead	ppm	ASTM D5185m	>9			
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 35 2 4 Barium ppm ASTM D5185m 0 0 1 Molybdenum ppm ASTM D5185m 2 3 2 Manganese ppm ASTM D5185m 15 12 14 Calcium ppm ASTM D5185m 1872 1965 1984 Phosphorus ppm ASTM D5185m 312 278 286 Zinc ppm ASTM D5185m 392 347 360 Sulfur ppm ASTM D5185m 3937 3705 3698 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >21 <1 2	• •	ppm	ASTM D5185m	>6			
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 35 2 4 Barium ppm ASTM D5185m 0 0 1 Molybdenum ppm ASTM D5185m 2 3 2 Manganese ppm ASTM D5185m <1		ppm	ASTM D5185m	>4			
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 35 2 4 Barium ppm ASTM D5185m 0 0 1 Molybdenum ppm ASTM D5185m 2 3 2 Manganese ppm ASTM D5185m -1 -1 1 Magnesium ppm ASTM D5185m 15 12 14 Calcium ppm ASTM D5185m 312 278 286 Zinc ppm ASTM D5185m 392 347 360 Sulfur ppm ASTM D5185m 3937 3705 3698 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >21 <1		ppm			-		
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 1 Molybdenum ppm ASTM D5185m 2 3 2 Manganese ppm ASTM D5185m <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 2 3 2 Manganese ppm ASTM D5185m <1	Boron	ppm	ASTM D5185m		35	2	4
Manganese ppm ASTM D5185m <1 <1 1 Magnesium ppm ASTM D5185m 15 12 14 Calcium ppm ASTM D5185m 1872 1965 1984 Phosphorus ppm ASTM D5185m 312 278 286 Zinc ppm ASTM D5185m 392 347 360 Sulfur ppm ASTM D5185m 3937 3705 3698 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 122 ▲ 205 ▲ 187 Sodium ppm ASTM D5185m >21 <1	Barium	ppm	ASTM D5185m		0	0	1
Magnesium ppm ASTM D5185m 15 12 14 Calcium ppm ASTM D5185m 1872 1965 1984 Phosphorus ppm ASTM D5185m 312 278 286 Zinc ppm ASTM D5185m 392 347 360 Sulfur ppm ASTM D5185m 3937 3705 3698 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 122 ▲ 205 ▲ 187 Sodium ppm ASTM D5185m >21 <1	Molybdenum	ppm	ASTM D5185m		2		
Calcium ppm ASTM D5185m 1872 1965 1984 Phosphorus ppm ASTM D5185m 312 278 286 Zinc ppm ASTM D5185m 392 347 360 Sulfur ppm ASTM D5185m 3937 3705 3698 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 122 205 187 Sodium ppm ASTM D5185m >21 <1	Manganese	ppm	ASTM D5185m		<1	<1	
Phosphorus ppm ASTM D5185m 312 278 286 Zinc ppm ASTM D5185m 392 347 360 Sulfur ppm ASTM D5185m 3937 3705 3698 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 122 ▲ 205 ▲ 187 Sodium ppm ASTM D5185m >21 <1	<u> </u>	ppm					
Zinc ppm ASTM D5185m 392 347 360 Sulfur ppm ASTM D5185m 3937 3705 3698 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 122 205 187 Sodium ppm ASTM D5185m >21 <1 2 2 Potassium ppm ASTM D5185m >20 0 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 5.7 5.9 5.8 Sulfation Abs/.1mm *ASTM D7415 21.8 24.9 24.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 13.3 16.0 15.1		ppm			_		
Sulfur ppm ASTM D5185m 3937 3705 3698 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 122 ▲ 205 ▲ 187 Sodium ppm ASTM D5185m >21 <1	·						
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >181 122 ▲ 205 ▲ 187 Sodium ppm ASTM D5185m >21 <1	•						
Silicon ppm ASTM D5185m >181 122 ▲ 205 ▲ 187 Sodium ppm ASTM D5185m >21 <1 2 2 2 Potassium ppm ASTM D5185m >20 0 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 5.7 5.9 5.8 Sulfation Abs/.1mm *ASTM D7415 21.8 24.9 24.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 13.3 16.0 15.1 Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.61 2.26 2.18			ASTM D5185m		3937	3705	3698
Sodium ppm ASTM D5185m >21 <1	CONTAMINANTS	;	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 0 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 5.7 5.9 5.8 Sulfation Abs/.1mm *ASTM D7415 21.8 24.9 24.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 13.3 16.0 15.1 Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.61 2.26 2.18	Silicon	ppm	ASTM D5185m	>181	122		<u>▲</u> 187
INFRA-RED	Sodium	ppm	ASTM D5185m	>21	<1	2	2
Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 5.7 5.9 5.8 Sulfation Abs/.1mm *ASTM D7415 21.8 24.9 24.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 13.3 16.0 15.1 Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.61 2.26 2.18	Potassium	ppm	ASTM D5185m	>20	0	0	0
Nitration Abs/cm *ASTM D7624 5.7 5.9 5.8 Sulfation Abs/.1mm *ASTM D7415 21.8 24.9 24.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 13.3 16.0 15.1 Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.61 2.26 2.18	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 21.8 24.9 24.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 13.3 16.0 15.1 Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.61 2.26 2.18	Soot %	%	*ASTM D7844		0	0.1	0.1
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 13.3 16.0 15.1 Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.61 2.26 2.18	Nitration	Abs/cm	*ASTM D7624		5.7	5.9	5.8
Oxidation Abs/.1mm *ASTM D7414 13.3 16.0 15.1 Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.61 2.26 2.18	Sulfation	Abs/.1mm	*ASTM D7415		21.8	24.9	24.1
Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.61 2.26 2.18	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.61 2.26 2.18	Oxidation	Abs/.1mm	*ASTM D7414		13.3	16.0	15.1
Base Number (BN) mg KOH/g ASTM D2896 5.4 3.01 ▲ 1.83 ▲ 1.97	Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	1.61	2.26	2.18
	Base Number (BN)	mg KOH/g	ASTM D2896	5.4	3.01	1.83	1.97

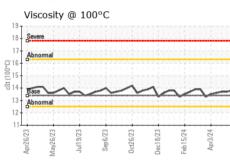


OIL ANALYSIS REPORT





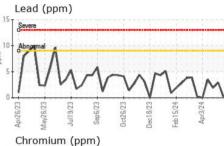


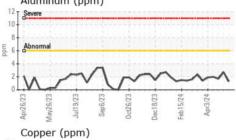


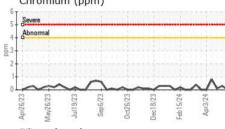
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	LIGHT
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>.11	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

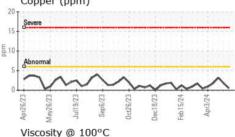
FLUID PROPER	TIES	method				history2
Visc @ 100°C	cSt	ASTM D445	13.4	13.8	13.7	13.7

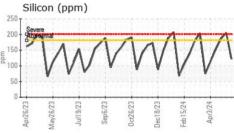
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23	Z3	23	23	23	23	24	24
Apr26/23	May26/23	Jul19/23	Sep6/23 -	Oct26/23 +	Jec18/23	Feb15/24	Apr3/24

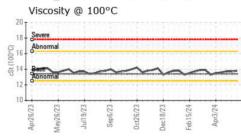


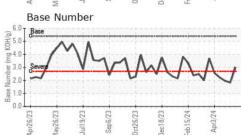
















Laboratory Sample No.

: WC0905721 Lab Number : 06180326 Unique Number : 11031652

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 15 May 2024

Tested : 16 May 2024 Diagnosed : 17 May 2024 - Sean Felton

EDL NA Recips-Grand Blanc Grand Blanc Powerstation, 2361 West Grand Blanc Road

Grand Blanc, MI US 48439 Contact: Tony Saint Marie tony.saintmarie@edlenergy.com

Test Package : MOB 2 Certificate 12367 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: