

OIL ANALYSIS REPORT

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NORMAL

Sample Rating Trend



Coopersville CAT 5 CPVM05BE

Biogas Engine

CHEVRON HDAX 6500 LFG GAS ENGINE OIL (--- GAL)

GAS ENGINE UIL (GAL)	12022 Sep20.	22 Oct2022 Dec2022	Janzuza Marzuza Mayzuza J	lun2023	
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0819453	WC0819446	WC0819439
Sample Date		Client Info		11 Aug 2023	03 Aug 2023	20 Jul 2023
Machine Age	hrs	Client Info		10766	10574	10274
Oil Age	hrs	Client Info		490	298	1
Oil Changed		Client Info		Not Changd	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATIO	N	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	>15	2	0	2
Chromium	ppm	ASTM D5185m	>4	0	<1	0
Nickel	ppm	ASTM D5185m	>2	0	<1	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>5	0	<1	0
Aluminum	ppm	ASTM D5185m	>6	2	3	2
Lead	ppm	ASTM D5185m	>9	4	3	0
Copper	ppm	ASTM D5185m	>14	1	2	1
Tin	ppm	ASTM D5185m	>4	7	6	1
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		0	1	2
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		3	2	2
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		13	12	8
Calcium	ppm	ASTM D5185m		1890	1929	1787
Phosphorus	ppm	ASTM D5185m		275	270	263
Zinc	ppm	ASTM D5185m		333	339	321
Sulfur	nnm	AOTH DELOF				1001
	ppm	ASTM D5185m		2087	1949	1901
CONTAMINANTS		method	limit/base	2087 current	1949 history1	1901 history2
Silicon	3	method		current	history1	history2
Silicon Sodium	5 ppm	method ASTM D5185m	>181	current 157	history1 129	history2 37
Silicon Sodium	ppm ppm	method ASTM D5185m ASTM D5185m	>181	current 157 0	history1 129 0	history2 37 <1
Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm %	method ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844	>181 >20 limit/base	current 157 0 0 current 0	history1 129 0 <1 history1 0	history2 37 <1 0 history2 0
Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m method	>181 >20 limit/base	current 157 0 0 current 0 6.5	history1 129 0 <1 history1	history2 37 <1 0 history2
Silicon Sodium Potassium	ppm ppm ppm %	method ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844	>181 >20 limit/base >20	current 157 0 0 current 0	history1 129 0 <1 history1 0	history2 37 <1 0 history2 0
Silicon Sodium Potassium INFRA-RED Soot % Nitration	S ppm ppm ppm % Abs/cm Abs/.1mm	method ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624	>181 >20 limit/base >20	current 157 0 0 current 0 6.5	history1 129 0 <1	history2 37 <1 0 history2 0 5.0
Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	S ppm ppm ppm % Abs/cm Abs/.1mm	method ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7415	>181 >20 limit/base >20 >30 limit/base	current 157 0 0 current 0 6.5 18.2	history1 129 0 <1	history2 37 <1 0 history2 0 5.0 14.9
Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD/	S ppm ppm ppm ppm % Abs/cm Abs/cm Abs/.1mm	method ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7624 *ASTM D7415	>181 >20 limit/base >20 >30 limit/base >25	current 157 0 0 current 0 6.5 18.2 current	history1 129 0 <1	history2 37 <1 0 history2 0 5.0 14.9 history2

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.



Abnormal 12 11

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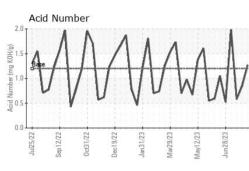
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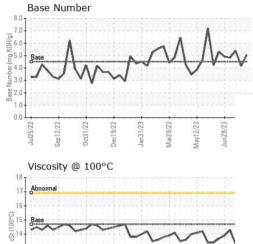
Sep12/22

Oct31/22 -

OIL ANALYSIS REPORT

VISUAL





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dor nulsified Water ee Water FLUID PROPERT sc @ 100°C GRAPHS fron (ppm) Severe Abnormal	scalar * scalar * scalar *	*Visual *Visual *Visual method	NORML >0.1 limit/base 14.7	NORML NEG NEG current 13.6 Lead (ppm)	NORML NEG NEG history1	NORML NEG NEG history2
nulsified Water ee Water FLUID PROPERT sc @ 100°C GRAPHS fron (ppm) Severe Abnormal	scalar * scalar * IES	*Visual *Visual method	>0.1 limit/base 14.7	NEG NEG current 13.6 Lead (ppm)	NEG NEG history1	NEG NEG history2
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FLUID PROPERT sc @ 100°C GRAPHS iron (ppm) Severe Abnormal	IES	method	14.7	current 13.6 Lead (ppm)	history1	history2
sc @ 100°C GRAPHS iron (ppm) Severe Abnormal			14.7	13.6 Lead (ppm)		
GRAPHS iron (ppm) <u>Severe</u> Abnormal	cSt	ASTM D445		Lead (ppm)	13.6	13.3
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Sep1 Oct3 Dec1	Jan31/23 Mar29/23	May12/23 Jun28/23		Julz Sep1 Oct3	Dec19/22 Jan31/23 Mar29/23	May12/23 Jun28/23
Aluminum (ppm)				Chromium (ppr	m)	
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Abnormal						
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viscosity @ 100°C			1	Base Number		
Abnormal				100005000100	12000	
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Abnormal	~	~~	La 4.0	NW	\sim	V
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	Abnormal Abnormal Copper (ppm) Severe Abnormal ZZZ I G: 61 - 90 ZZZ I G: 70 ZZZ I G: 70	Severe Abnormal Copper (ppm) Severe Annormal Copper (ppm) Severe Annormal CZZI Lieve CZZI LIEVE CZZ	Abnormal Abnormal Abnormal Copper (ppm) Severe Annormal Copper (ppm) Copper (ppm) Copp	Severe 6 Ahnormal 4 Abnormal 6 Abnormal 6 Abnormal 6 Copper (ppm) 6 Severe 6 Abnormal 6 Copper (ppm) 6 Severe 6 Abnormal 6 Copper (ppm) 6 Severe 6	Anormal Anorma	Anormal Ano