

OIL ANALYSIS REPORT

Sample Rating Trend

NOR

NORMAL



HANM04BE (S/N 4EK00413) Component

Biogas Engine

CHEVRON HDAX LFG SAE 40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: Changed 7/19/23)

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

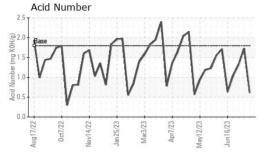
Fluid Condition

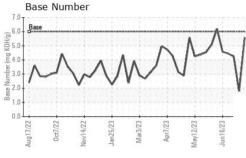
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

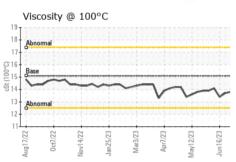
SAE 40 (GAI	-)	g2022 Oct20	22 Nov2022 Jan2023	Marž023 Aprž023 Mayž023	Jun2023	
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0802671	WC0802703	WC0802701
Sample Date		Client Info		20 Jul 2023	13 Jul 2023	28 Jun 2023
Machine Age	hrs	Client Info		67986	67826	67468
Oil Age	hrs	Client Info		19	716	358
Oil Changed		Client Info		Changed	Not Changd	N/A
Sample Status				NORMAL	ABNORMAL	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	4	5
Chromium	ppm	ASTM D5185m	>4	0	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>6	2	2	<1
Lead	ppm	ASTM D5185m	>9	0	1	<1
Copper	ppm	ASTM D5185m	>14	2	7	6
Tin	ppm	ASTM D5185m	>4	2	5	4
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
Oddiniani	PP	7.0 1 20 100		U	O	-
ADDITIVES	PP	method	limit/base	current	history1	history2
	ppm	method ASTM D5185m	limit/base	current 2	history1	history2
ADDITIVES Boron Barium		method ASTM D5185m ASTM D5185m	limit/base	current 2 <1	history1 <1 0	history2 0 0
ADDITIVES Boron	ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	current 2 <1 2	history1 <1 0 2	history2 0 0 2
ADDITIVES Boron Barium Molybdenum Manganese	ppm	method ASTM D5185m ASTM D5185m	limit/base	current 2 <1	history1 <1 0	history2 0 0 2 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	current 2 <1 2 <1 1 3	history1 <1 0 2 <1 11	history2 0 0 2 <1 10
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	current 2 <1 2 <1 13 1886	history1 <1 0 2 <1	history2 0 0 2 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	method ASTM D5185m	270	current 2 <1 2 <1 13 1886 292	history1 <1 0 2 <1 11 2092 314	history2 0 0 2 <1 10 2038 301
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	method ASTM D5185m		current 2 <1 2 <1 13 1886	history1 <1 0 2 <1 11 2092 314 390	history2 0 0 2 <1 10 2038 301 378
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m	270	current 2 <1 2 <1 13 1886 292	history1 <1 0 2 <1 11 2092 314	history2 0 0 2 <1 10 2038 301
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	270	current 2 <1 2 <1 13 1886 292 340	history1 <1 0 2 <1 11 2092 314 390	history2 0 0 2 <1 10 2038 301 378
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	270 310	current 2 <1 2 <1 13 1886 292 340 2200	history1 <1 0 2 <1 11 2092 314 390 2803	history2 0 0 2 <1 10 2038 301 378 2766
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	270 310	current 2 <1 2 <1 13 1886 292 340 2200 current	history1 <1 0 2 <1 11 2092 314 390 2803 history1	history2 0 0 2 <1 10 2038 301 378 2766 history2 111 3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	270 310	current 2 <1 2 <1 13 1886 292 340 2200 current 41	history1 <1 0 2 <1 11 2092 314 390 2803 history1 135	history2 0 0 2 <1 10 2038 301 378 2766 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	270 310 limit/base >181	current 2 <1 2 <1 13 1886 292 340 2200 current 41 <1	history1 <1 0 2 <1 11 2092 314 390 2803 history1 135	history2 0 0 2 <1 10 2038 301 378 2766 history2 111 3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	270 310 limit/base >181 >20	current 2 <1 2 <1 13 1886 292 340 2200 current 41 <1 0	history1 <1 0 2 <1 11 2092 314 390 2803 history1 135 2 <1	history2 0 0 2 <1 10 2038 301 378 2766 history2 111 3 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	270 310 limit/base >181 >20 limit/base	current 2 <1 2 <1 13 1886 292 340 2200 current 41 <1 0 current	history1 <1 0 2 <1 11 2092 314 390 2803 history1 135 2 <1 history1	history2 0 0 2 <1 10 2038 301 378 2766 history2 111 3 <1
ADDITIVES 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	method ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	270 310 limit/base >181 >20 limit/base	current 2 <1 2 <1 13 1886 292 340 2200 current 41 <1 0 current	history1 <1 0 2 <1 11 2092 314 390 2803 history1 135 2 <1 history1 0.1	history2 0 0 2 <1 10 2038 301 378 2766 history2 111 3 <1 history2 0.1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm	method ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	270 310 limit/base >181 >20 limit/base	current 2 <1 2 <1 13 1886 292 340 2200 current 41 <1 0 current 0 5.7	history1 <1 0 2 <1 11 2092 314 390 2803 history1 135 2 <1 history1 0.1 7.9	history2 0 0 2 <1 10 2038 301 378 2766 history2 111 3 <1 history2 0.1 6.9
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm	method ASTM D5185m method ASTM D5185m ASTM D5185m *ASTM D5185m ASTM D78185m ASTM D78185m	270 310 limit/base >181 >20 limit/base >20 >30	current 2 <1 2 <1 13 1886 292 340 2200 current 41 <1 0 current 0 5.7 16.1	history1 <1 0 2 <1 11 2092 314 390 2803 history1 135 2 <1 history1 0.1 7.9 22.0	history2 0 0 2 <1 10 2038 301 378 2766 history2 111 3 <1 history2 0.1 6.9 20.1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm	method ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624 *ASTM D7415 method	270 310 limit/base >181 >20 limit/base >20 >30 limit/base >25	current 2 <1 2 <1 13 1886 292 340 2200 current 41 <1 0 current 0 5.7 16.1 current	history1 <1 0 2 <1 11 2092 314 390 2803 history1 135 2 <1 history1 0.1 7.9 22.0 history1	history2 0 0 2 <1 10 2038 301 378 2766 history2 111 3 <1 history2 0.1 6.9 20.1 history2



OIL ANALYSIS REPORT



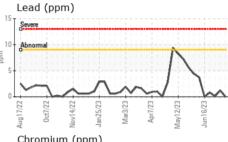


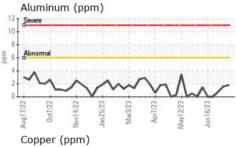


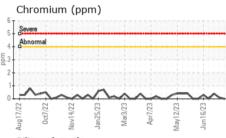
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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

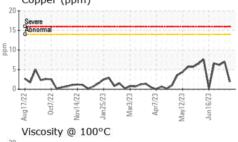
FLUID FROFER	THES	memou			HISTOLAL	HISTORYZ	
Visc @ 100°C	cSt	ASTM D445	15.1	13.4	14.3	13.8	

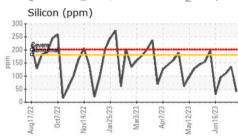
Severe						
Abnormal	A					
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L	ノヽ	<u> </u>		-		
7 7	75	5/23	Mar3/23	Apr7/23	May12/23	Jun16/23
Aug17/22	Vov14/	L 3	47.5			

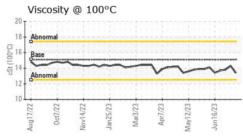


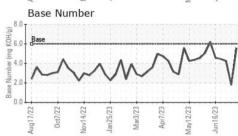
















Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** Test Package : MOB 2

: WC0802671 : 05905652

: 10567008

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 24 Jul 2023 : 25 Jul 2023 Diagnosed

Diagnostician : Sean Felton

Contact: TIM CUSICK tim.cusick@energydevelopments.com

EDL NA Recips-Hancock County

HANCOCK COUNTY POWER STATION, 3574 TOWNSHIP ROAD 142

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)

FINDLAY, OH

US 45840

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