



OIL ANALYSIS REPORT

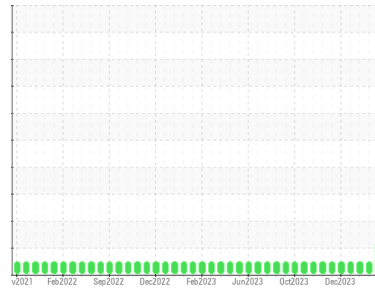
Sample Rating Trend

DEGRADATION

Machine Id
CHP4-M0116 (S/N 2210062)

Component
Biogas Engine

Fluid
MOBIL PEGASUS 1005 (120 GAL)



DIAGNOSIS

▲ Recommendation

The oil is near the end of its useful service life, recommend schedule an oil change. 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 level is low. The AN level is at the top-end of the recommended limit.

SAMPLE INFORMATION

| | method | limit/base | current | history1 | history2 |
|---------------|-------------|-------------|--------------------|-------------|-------------|
| Sample Number | Client Info | | WC0887432 | WC0887425 | WC0887440 |
| Sample Date | Client Info | | 13 Feb 2024 | 01 Feb 2024 | 17 Jan 2024 |
| Machine Age | hrs | Client Info | 53324 | 53063 | 52984 |
| Oil Age | hrs | Client Info | 9407 | 9146 | 9067 |
| Oil Changed | Client Info | | Not Chngd | Not Chngd | Not Chngd |
| Sample Status | | | ABNORMAL | NORMAL | NORMAL |

CONTAMINATION

| | method | limit/base | current | history1 | history2 |
|--------|-----------|------------|----------------|----------|----------|
| Fuel | WC Method | >4.0 | <1.0 | <1.0 | <1.0 |
| Water | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | WC Method | | NEG | NEG | NEG |

WEAR METALS

| | method | limit/base | current | history1 | history2 |
|----------|--------|-----------------|--------------|----------|----------|
| Iron | ppm | ASTM D5185m >15 | 12 | 8 | 4 |
| Chromium | ppm | ASTM D5185m >5 | <1 | 0 | <1 |
| Nickel | ppm | ASTM D5185m >2 | 0 | 0 | <1 |
| Titanium | ppm | ASTM D5185m >2 | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m >2 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m >10 | 4 | 4 | 5 |
| Lead | ppm | ASTM D5185m >10 | 4 | 2 | 3 |
| Copper | ppm | ASTM D5185m >10 | 1 | 0 | 4 |
| Tin | ppm | ASTM D5185m >5 | 0 | 0 | <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 | 93 | 107 | 96 |
| Barium | ppm | ASTM D5185m | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 3 | 2 | 5 |
| Manganese | ppm | ASTM D5185m | 0 | 0 | <1 |
| Magnesium | ppm | ASTM D5185m | 15 | 15 | 32 |
| Calcium | ppm | ASTM D5185m | 2160 | 2065 | 1966 |
| Phosphorus | ppm | ASTM D5185m | 327 | 347 | 335 |
| Zinc | ppm | ASTM D5185m | 502 | 477 | 465 |
| Sulfur | ppm | ASTM D5185m | 2780 | 2652 | 2445 |

CONTAMINANTS

| | method | limit/base | current | history1 | history2 |
|-----------|--------|------------------|----------|----------|----------|
| Silicon | ppm | ASTM D5185m >300 | 7 | 7 | 6 |
| Sodium | ppm | ASTM D5185m | 6 | 8 | 5 |
| Potassium | ppm | ASTM D5185m >20 | 4 | <1 | 0 |

INFRA-RED

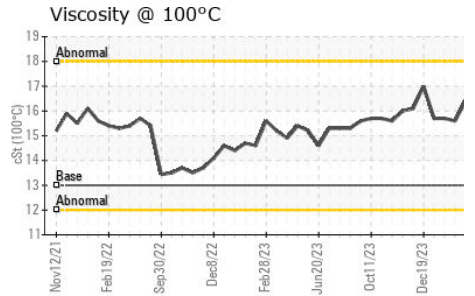
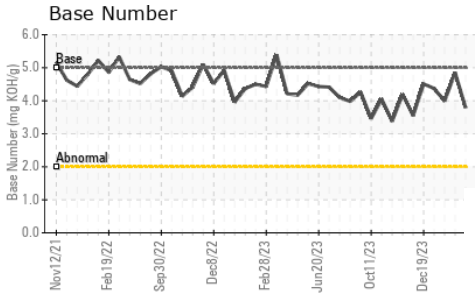
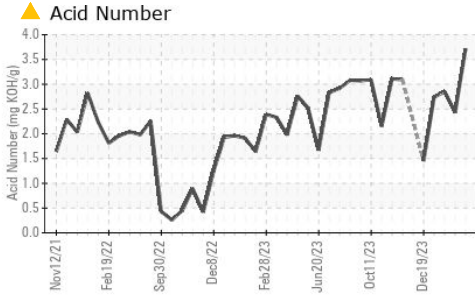
| | method | limit/base | current | history1 | history2 |
|-----------|----------|-----------------|-------------|----------|----------|
| Soot % | % | *ASTM D7844 | 0.1 | 0.1 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 >20 | 12.4 | 11.4 | 11.4 |
| Sulfation | Abs/.1mm | *ASTM D7415 >30 | 30.3 | 27.9 | 28.0 |

FLUID DEGRADATION

| | method | limit/base | current | history1 | history2 |
|------------------|----------|-----------------|---------------|----------|----------|
| Oxidation | Abs/.1mm | *ASTM D7414 >25 | 40.6 | 34.6 | 35.1 |
| Acid Number (AN) | mg KOH/g | ASTM D8045 | ▲ 3.71 | 2.43 | 2.85 |
| Base Number (BN) | mg KOH/g | ASTM D2896 5.0 | 3.79 | 4.85 | 3.99 |



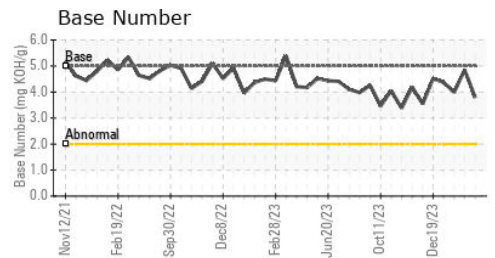
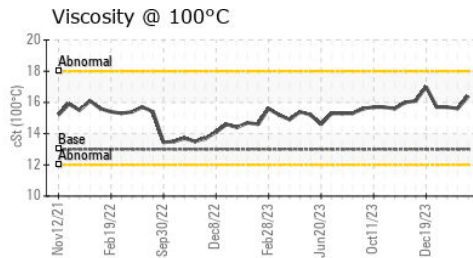
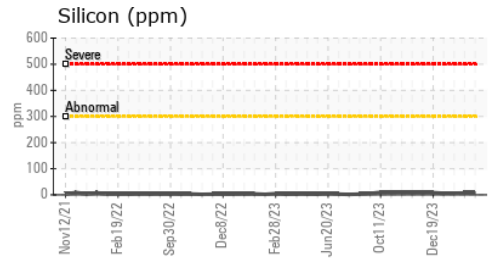
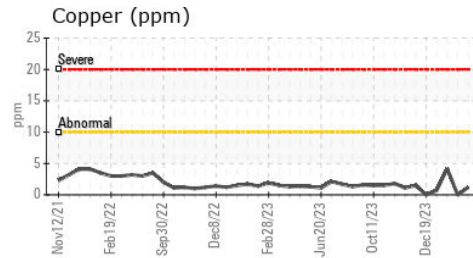
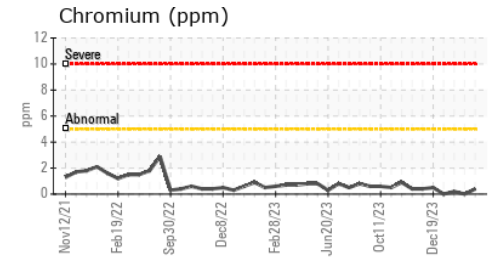
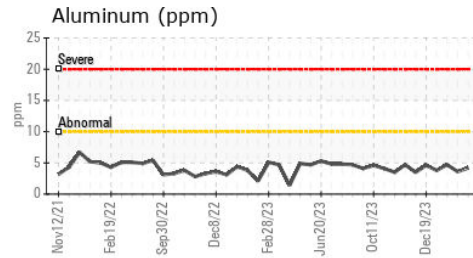
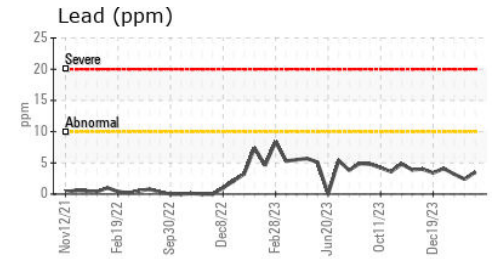
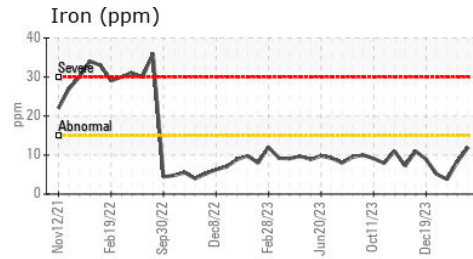
OIL ANALYSIS REPORT



| VISUAL | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | NONE | NONE |
| Silt | scalar | *Visual | NONE | NONE | NONE |
| Debris | scalar | *Visual | NONE | NONE | NONE |
| Sand/Dirt | scalar | *Visual | NONE | NONE | NONE |
| Appearance | scalar | *Visual | NORML | NORML | NORML |
| Odor | scalar | *Visual | NORML | NORML | NORML |
| Emulsified Water | scalar | *Visual | >0.2 | NEG | NEG |
| Free Water | scalar | *Visual | | NEG | NEG |

| FLUID PROPERTIES | method | limit/base | current | history1 | history2 |
|------------------|--------|--------------|---------|----------|----------|
| Visc @ 100°C | cSt | ASTM D445 13 | 16.4 | 15.6 | 15.7 |

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
 Sample No. : WC0887432
 Lab Number : 06097212
 Unique Number : 10890065
 Test Package : MOB 2

Received : 22 Feb 2024
 Tested : 27 Feb 2024
 Diagnosed : 27 Feb 2024 - Jonathan Hester

KB BIOENERGY INC
 2677 RIVERVIEW RD
 AKRON, OH
 US 44313
 Contact: JASON SHICK
 jasons@kbbioenergy.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)

T:
F: (330)864-7023