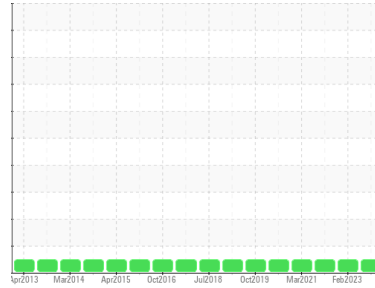




OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Area

4

Machine Id

WINERGY GEARBOX WTG-402 (S/N 4834518-0020-2)

Component

Wind Turbine Gearbox

Fluid

FUCHS RENOLIN UNISYN CKC ISO 320 (340 LTR)

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. The amount and size of particulates present in the system are acceptable.

Fluid Condition

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 Number | Client Info | | WC0804489 | WC0804491 | WC05504519 |
| Sample Date | Client Info | | 07 Mar 2023 | 28 Feb 2023 | 26 Jan 2022 |
| Machine Age | yrs | Client Info | 7 | 7 | 73 |
| Oil Age | yrs | Client Info | 7 | 7 | 0 |
| Oil Changed | Client Info | | Not Changed | Not Changed | N/A |
| Sample Status | | | NORMAL | NORMAL | NORMAL |

WEAR METALS

| | method | limit/base | current | history1 | history2 | |
|----------|------------|-------------|-----------|--------------|----------|-----|
| PQ | ASTM D8184 | >50 | 13 | 13 | 19 | |
| Iron | ppm | ASTM D5185m | >65 | 25 | 58 | 53 |
| Chromium | ppm | ASTM D5185m | >3 | <1 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >3 | 0 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | >10 | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m | | 0 | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >10 | <1 | <1 | 0 |
| Lead | ppm | ASTM D5185m | >5 | 0 | 0 | 0 |
| Copper | ppm | ASTM D5185m | >10 | 0 | 0 | <1 |
| Tin | ppm | ASTM D5185m | >10 | 0 | <1 | 0 |
| Antimony | ppm | ASTM D5185m | >5 | --- | --- | --- |
| 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 | 25 | 0 | 1 | 0 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Manganese | ppm | ASTM D5185m | | <1 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Calcium | ppm | ASTM D5185m | 17 | 0 | 5 | 10 |
| Phosphorus | ppm | ASTM D5185m | 200 | 93 | 175 | 194 |
| Zinc | ppm | ASTM D5185m | | 0 | 25 | 22 |
| Sulfur | ppm | ASTM D5185m | 5000 | 4674 | 5849 | 4472 |

CONTAMINANTS

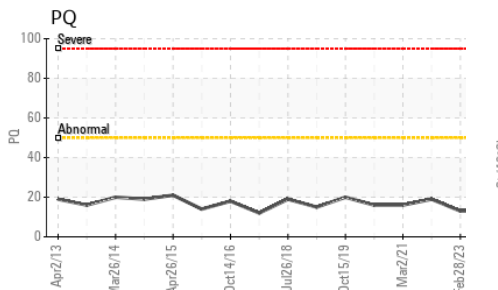
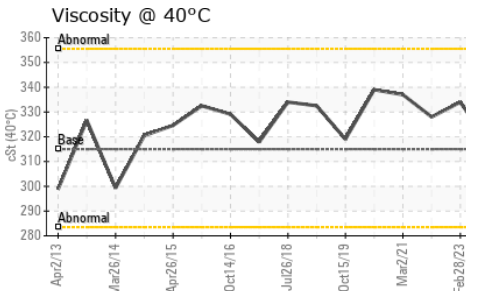
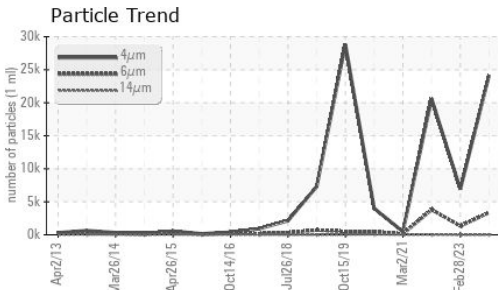
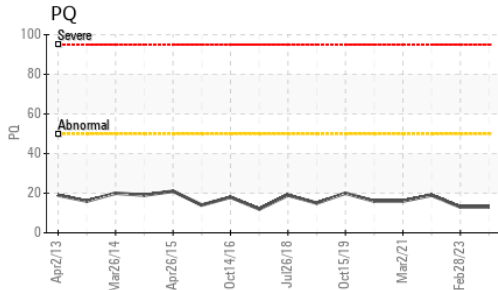
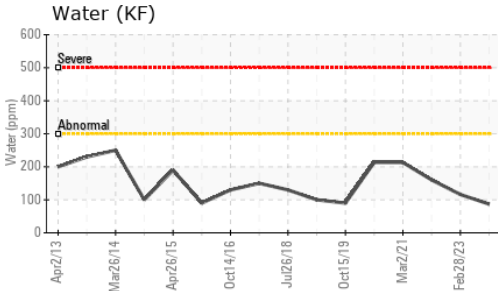
| | method | limit/base | current | history1 | history2 | |
|-----------|--------|-------------|---------|--------------|----------|-------|
| Silicon | ppm | ASTM D5185m | >15 | 0 | 0 | 0 |
| Sodium | ppm | ASTM D5185m | | <1 | 3 | 2 |
| Potassium | ppm | ASTM D5185m | >20 | <1 | <1 | 0 |
| Water | % | ASTM D6304 | >0.03 | 0.008 | 0.011 | 0.016 |
| ppm Water | ppm | ASTM D6304 | >300 | 87.0 | 116.1 | 160.2 |

FLUID CLEANLINESS

| | method | limit/base | current | history1 | history2 |
|-----------------|--------------|------------|-----------------|----------|----------|
| Particles >4µm | ASTM D7647 | | 24155 | 6902 | 20618 |
| Particles >6µm | ASTM D7647 | >5000 | 3372 | 1346 | 3820 |
| Particles >14µm | ASTM D7647 | >640 | 16 | 10 | 35 |
| Particles >21µm | ASTM D7647 | >160 | 1 | 2 | 5 |
| Particles >38µm | ASTM D7647 | >40 | 0 | 1 | 1 |
| Particles >71µm | ASTM D7647 | >10 | 0 | 0 | 0 |
| Oil Cleanliness | ISO 4406 (c) | >--/19/16 | 22/19/11 | 20/18/10 | 22/19/12 |



OIL ANALYSIS REPORT

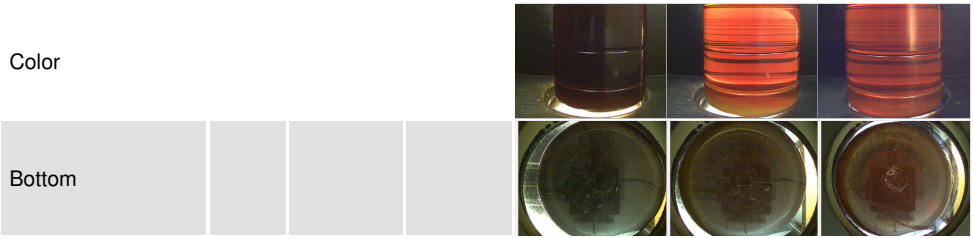


| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|-------------------|----------|------------|------------|-------------|----------|----------|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | 0.9 | 0.67 | 0.87 | 0.95 |

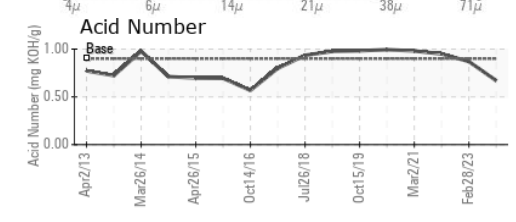
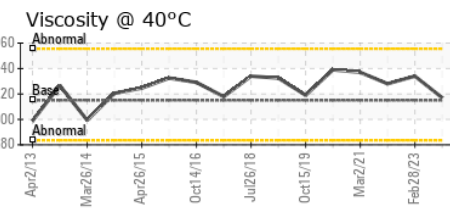
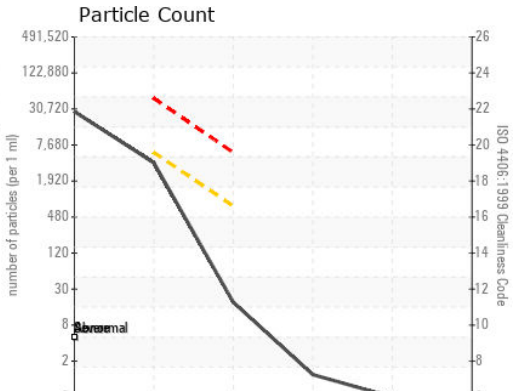
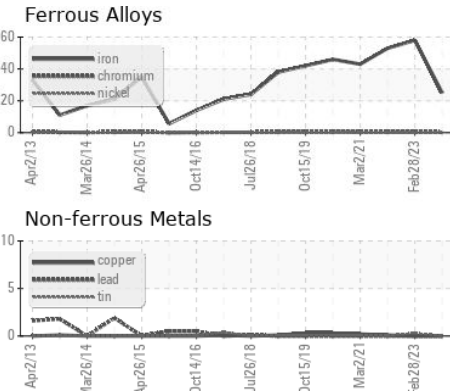
| VISUAL | | method | limit/base | current | history1 | history2 |
|------------------|--------|---------|------------|--------------|----------|----------|
| White Metal | scalar | *Visual | NONE | LIGHT | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | NONE | NONE | NONE |
| Silt | scalar | *Visual | NONE | NONE | LIGHT | 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 | >0.03 | NEG | NEG | NEG |
| Free Water | scalar | *Visual | | NEG | NEG | NEG |

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|------------------|-----|-----------|------------|------------|----------|----------|
| Visc @ 40°C | cSt | ASTM D445 | 315 | 317 | 334 | 328 |

| SAMPLE IMAGES | | method | limit/base | current | history1 | history2 |
|---------------|--|--------|------------|---------|----------|----------|
|---------------|--|--------|------------|---------|----------|----------|



GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0804489 **Received** : 26 May 2023
Lab Number : 05857936 **Diagnosed** : 30 May 2023
Unique Number : 10492401 **Diagnostician** : Don Baldrige
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

ENERGIA EOLICA
 STA ANA KM25 CARRETERA AL SUR, A 1KM DEL CRUCE
 FRANCISCO MORAZAN, ZZ
 HN
 Contact: SANTOS DEL CID
 sdelcid@dennci.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: x:
 F: x: