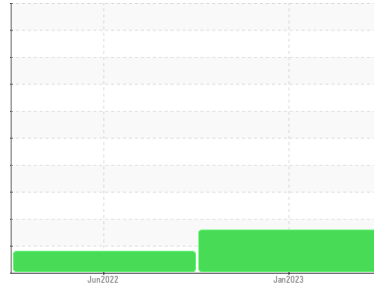




PROBLEM SUMMARY

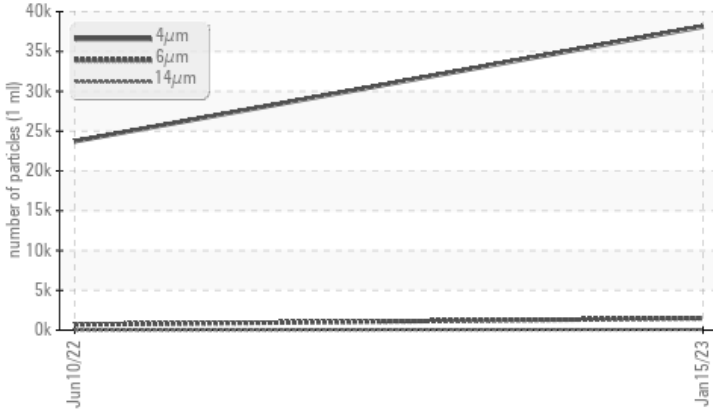
Area
IRON STAR [200006142]
 Machine Id
15WEA88308
 Component
Wind Turbine Gearbox
 Fluid
GEAR OIL (PAO) ISO 320 (--- LTR)

Sample Rating Trend



COMPONENT CONDITION SUMMARY

▲ Particle Trend



RECOMMENDATION

We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS

Sample Status			ABNORMAL	ABNORMAL	---
Particles >6µm	ASTM D7647	>320	▲ 1484	▲ 698	---
Particles >14µm	ASTM D7647	>40	▲ 77	18	---
Particles >21µm	ASTM D7647	>10	▲ 23	5	---
Oil Cleanliness	ISO 4406 (c)	>--/15/12	▲ 22/18/13	▲ 22/17/11	---

Customer Id: NORDEX
 Sample No.: WC05739624
 Lab Number: 05739624
 Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data:
 Jonathan Hester +1 919-379-4092 x4092
jhester@wearcheckusa.com

To change component or sample information:
 Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Filter	MISSED	Sep 27 2023	?	We recommend you service the filters on this component if applicable.

HISTORICAL DIAGNOSIS

10 Jun 2022 Diag: Doug Bogart

ISO



Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample. All component wear rates are normal. There is a high amount of silt (particulates < 14 microns in size) present in the oil. Confirm oil type. The AN level is acceptable for this fluid. The condition of the oil is acceptable for the time in service.

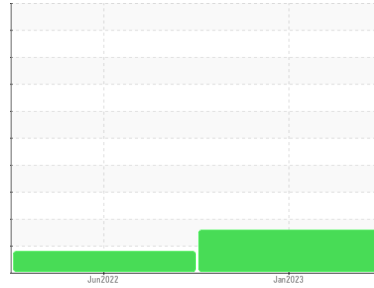
view report





OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Area
IRON STAR [200006142]
 Machine Id
15WEA88308
 Component
Wind Turbine Gearbox
 Fluid
GEAR OIL (PAO) ISO 320 (--- LTR)

DIAGNOSIS

Recommendation

We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is a high amount of particulates present in the oil.

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		WC05739624	NX05596453	---
Sample Date	Client Info		15 Jan 2023	10 Jun 2022	---
Machine Age	hrs	Client Info	0	0	---
Oil Age	hrs	Client Info	0	0	---
Oil Changed	Client Info		N/A	N/A	---
Sample Status			ABNORMAL	ABNORMAL	---

WEAR METALS

	method	limit/base	current	history1	history2
PQ	ASTM D8184	>50	8	15	---
Iron	ppm	ASTM D5185m	>30	18	9
Chromium	ppm	ASTM D5185m	>3	0	0
Nickel	ppm	ASTM D5185m	>3	0	0
Titanium	ppm	ASTM D5185m	>10	0	0
Silver	ppm	ASTM D5185m		0	<1
Aluminum	ppm	ASTM D5185m	>30	0	<1
Lead	ppm	ASTM D5185m	>15	<1	<1
Copper	ppm	ASTM D5185m	>10	0	<1
Tin	ppm	ASTM D5185m	>10	<1	<1
Vanadium	ppm	ASTM D5185m		0	0
Cadmium	ppm	ASTM D5185m		0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	25	9	9
Barium	ppm	ASTM D5185m	12	0	0
Molybdenum	ppm	ASTM D5185m	5	0	0
Manganese	ppm	ASTM D5185m		<1	<1
Magnesium	ppm	ASTM D5185m	25	0	<1
Calcium	ppm	ASTM D5185m	25	21	17
Phosphorus	ppm	ASTM D5185m	375	217	176
Zinc	ppm	ASTM D5185m	25	3	3
Sulfur	ppm	ASTM D5185m	4900	5677	4568

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>+15	7	4
Sodium	ppm	ASTM D5185m		4	2
Potassium	ppm	ASTM D5185m	>20	0	1
Water	%	ASTM D6304	>0.02	0.005	0.010
ppm Water	ppm	ASTM D6304	>200	58.8	104.3

FLUID CLEANLINESS

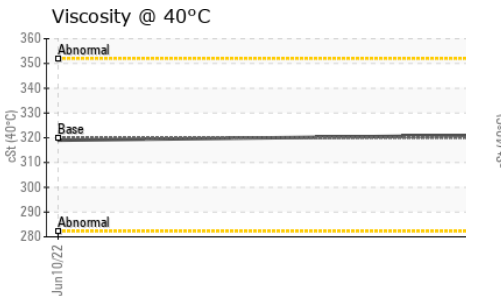
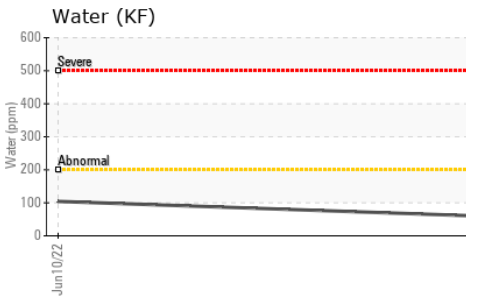
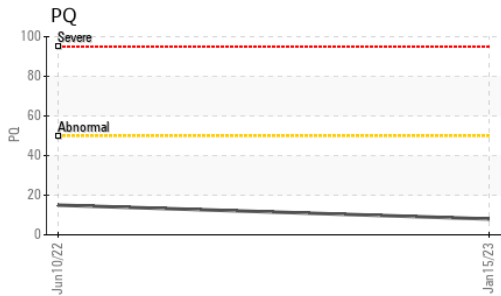
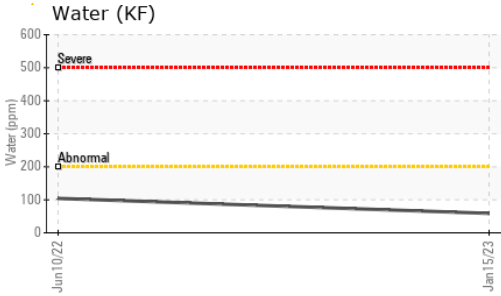
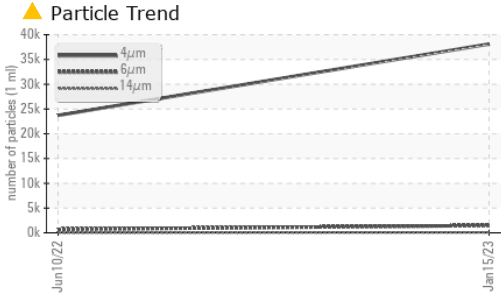
	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		38115	23722	---
Particles >6µm	ASTM D7647	>320	▲ 1484	▲ 698	---
Particles >14µm	ASTM D7647	>40	▲ 77	18	---
Particles >21µm	ASTM D7647	>10	▲ 23	5	---
Particles >38µm	ASTM D7647	>3	1	1	---
Particles >71µm	ASTM D7647	>3	0	0	---
Oil Cleanliness	ISO 4406 (c)	>--/15/12	▲ 22/18/13	▲ 22/17/11	---

FLUID DEGRADATION

	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.10	0.36	0.31



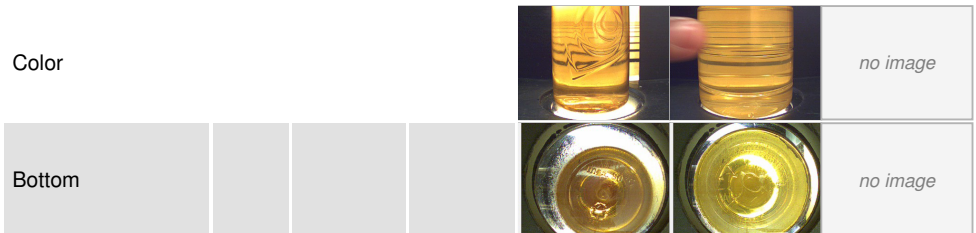
OIL ANALYSIS REPORT



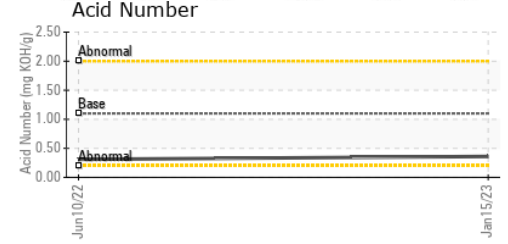
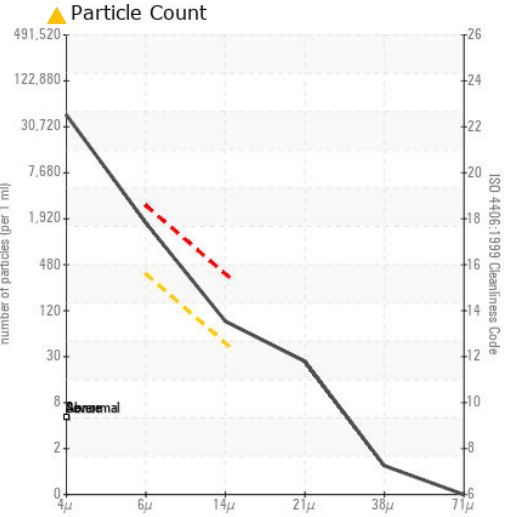
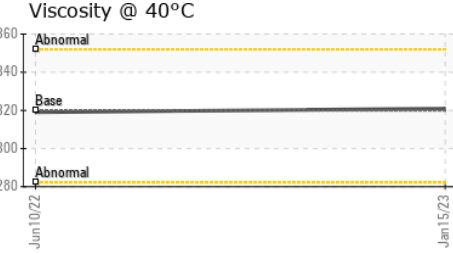
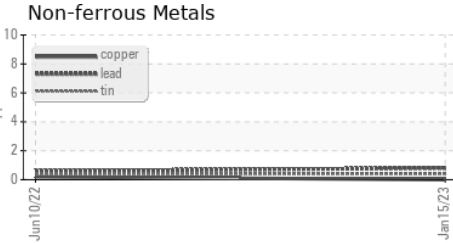
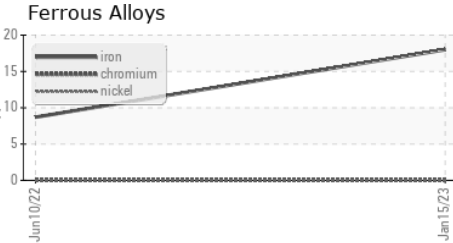
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	---
Yellow Metal	scalar	*Visual	NONE	NONE	---
Precipitate	scalar	*Visual	NONE	NONE	---
Silt	scalar	*Visual	NONE	NONE	---
Debris	scalar	*Visual	NONE	NONE	---
Sand/Dirt	scalar	*Visual	NONE	NONE	---
Appearance	scalar	*Visual	NORML	NORML	---
Odor	scalar	*Visual	NORML	NORML	---
Emulsified Water	scalar	*Visual	>0.02	NEG	---
Free Water	scalar	*Visual		NEG	---

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	320	321	319

SAMPLE IMAGES	method	limit/base	current	history1	history2
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GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC05739624 **Received** : 16 Jan 2023
Lab Number : 05739624 **Diagnosed** : 17 Jan 2023
Unique Number : 10294223 **Diagnostician** : Jonathan Hester
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

NORDEX USA - Chicago
 300 SOUTH WACKER DRIVE, SUITE 1500
 CHICAGO, IL
 US 60606
 Contact: DEVIN LINEHAN
 DLinehan@nordex-online.com
 T: (312)386-4124
 F: (312)386-7102

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)