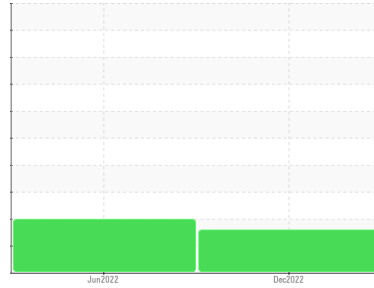




PROBLEM SUMMARY

Area
IRON STAR [200006142]
 Machine Id
13WEA88329
 Component
Wind Turbine Gearbox
 Fluid
GEAR OIL (PAO) ISO 320 (--- LTR)

Sample Rating Trend

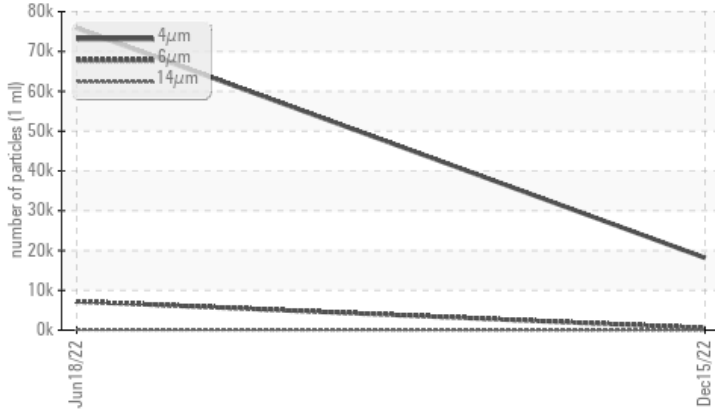


ISO



COMPONENT CONDITION SUMMARY

▲ Particle Trend



RECOMMENDATION

No corrective action is recommended at this time.
 Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS

Sample Status			ATTENTION	ABNORMAL	---
Particles >6µm	ASTM D7647	>320	▲ 517	▲ 7201	---
Particles >14µm	ASTM D7647	>40	▲ 47	▲ 158	---
Particles >21µm	ASTM D7647	>10	▲ 12	▲ 28	---
Oil Cleanliness	ISO 4406 (c)	>--/15/12	▲ 21/16/13	▲ 23/20/14	---

Customer Id: NORDEX
 Sample No.: NX05739626
 Lab Number: 05739626
 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

There are no recommended actions for this sample.

HISTORICAL DIAGNOSIS

18 Jun 2022 Diag: Don Baldrige

ISO



We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor. All component wear rates are normal. There is a high amount of particulates present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

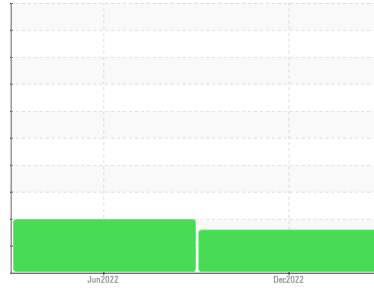
view report





OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Area
IRON STAR [200006142]
 Machine Id
13WEA88329
 Component
Wind Turbine Gearbox
 Fluid
GEAR OIL (PAO) ISO 320 (--- LTR)

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is a moderate 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		NX05739626	NX05596465	---
Sample Date	Client Info		15 Dec 2022	18 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			ATTENTION	ABNORMAL	---

WEAR METALS

	method	limit/base	current	history1	history2
PQ	ASTM D8184	>50	17	17	---
Iron	ppm	ASTM D5185m	>30	15	8
Chromium	ppm	ASTM D5185m	>3	0	0
Nickel	ppm	ASTM D5185m	>3	0	<1
Titanium	ppm	ASTM D5185m	>10	0	0
Silver	ppm	ASTM D5185m		0	<1
Aluminum	ppm	ASTM D5185m	>30	0	0
Lead	ppm	ASTM D5185m	>15	<1	1
Copper	ppm	ASTM D5185m	>10	<1	<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	8	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	22	18
Phosphorus	ppm	ASTM D5185m	375	214	175
Zinc	ppm	ASTM D5185m	25	3	2
Sulfur	ppm	ASTM D5185m	4900	5634	4656

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>+15	7	6
Sodium	ppm	ASTM D5185m		4	2
Potassium	ppm	ASTM D5185m	>20	0	1
Water	%	ASTM D6304	>0.02	0.005	0.011
ppm Water	ppm	ASTM D6304	>200	55.8	119.2

FLUID CLEANLINESS

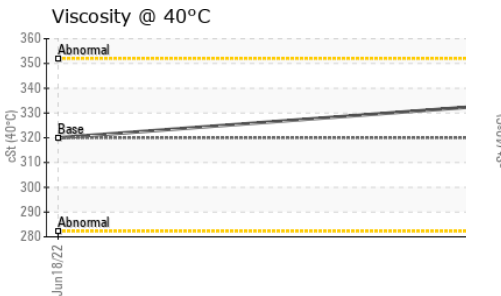
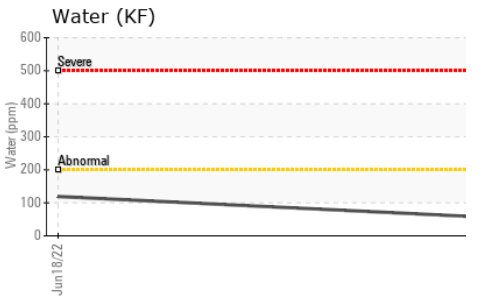
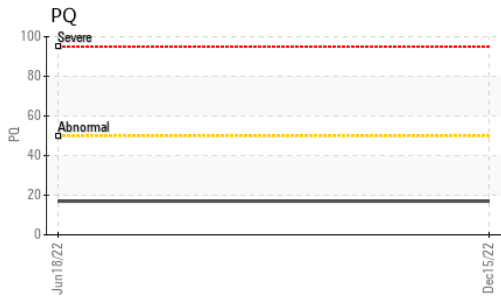
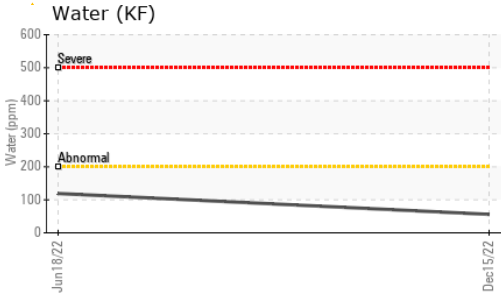
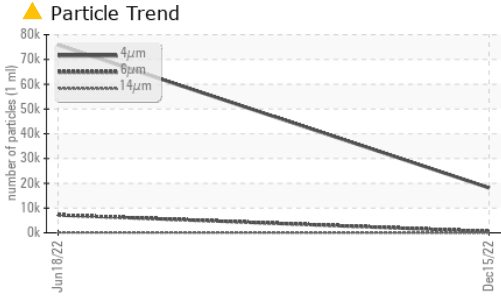
	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		18149	75846	---
Particles >6µm	ASTM D7647	>320	▲ 517	▲ 7201	---
Particles >14µm	ASTM D7647	>40	▲ 47	▲ 158	---
Particles >21µm	ASTM D7647	>10	▲ 12	▲ 28	---
Particles >38µm	ASTM D7647	>3	1	▲ 4	---
Particles >71µm	ASTM D7647	>3	0	2	---
Oil Cleanliness	ISO 4406 (c)	>--/15/12	▲ 21/16/13	▲ 23/20/14	---

FLUID DEGRADATION

	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.10	0.34	0.10



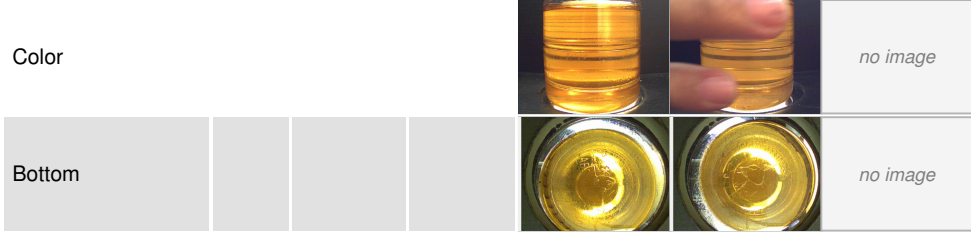
OIL ANALYSIS REPORT



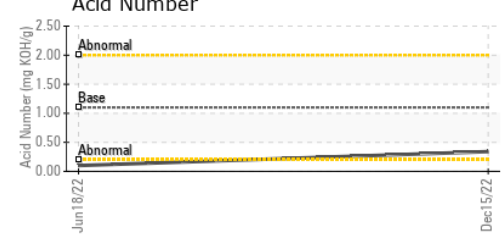
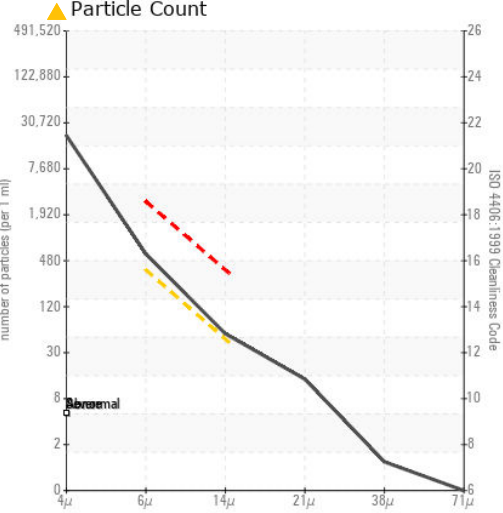
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	---
Yellow Metal	scalar	*Visual	NONE	NONE	---
Precipitate	scalar	*Visual	NONE	NONE	---
Silt	scalar	*Visual	NONE	NONE	---
Debris	scalar	*Visual	NONE	NONE	---
Sand/Dirt	scalar	*Visual	NONE	NONE	---
Appearance	scalar	*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	333	320	---

SAMPLE IMAGES	method	limit/base	current	history1	history2
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GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX05739626 **Received** : 16 Jan 2023
Lab Number : 05739626 **Diagnosed** : 17 Jan 2023
Unique Number : 10294225 **Diagnostician** : Jonathan Hester
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

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

Certificate L2367
 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)