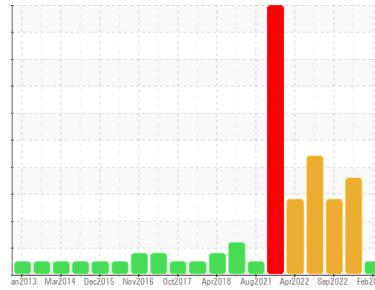




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area

BEEBE [2000060080]

Machine Id

04WEA82343

Component

Wind Turbine Gearbox

Fluid

CASTROL OPTIGEAR SYNTHETIC X 320 (4 LTR)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

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			NX06146581	NX05798676	NX05666441
Sample Date	Client Info			21 Feb 2024	12 Jan 2023	12 Sep 2022
Machine Age	hrs	Client Info		96780	72217	69733
Oil Age	hrs	Client Info		0	0	0
Oil Changed	Client Info			N/A	N/A	N/A
Sample Status				NORMAL	ABNORMAL	ABNORMAL

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184	>80	26	▲ 107	▲ 99
Iron	ppm	ASTM D5185m	>150	43	▲ 292	▲ 282
Chromium	ppm	ASTM D5185m	>5	<1	2	2
Nickel	ppm	ASTM D5185m	>10	1	1	<1
Titanium	ppm	ASTM D5185m	>10	1	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>10	7	1	1
Lead	ppm	ASTM D5185m	>20	<1	0	0
Copper	ppm	ASTM D5185m	>50	1	2	2
Tin	ppm	ASTM D5185m	>10	<1	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		1	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		0	0	28
Barium	ppm	ASTM D5185m		4	2	2
Molybdenum	ppm	ASTM D5185m	1150	972	801	792
Manganese	ppm	ASTM D5185m		1	2	2
Magnesium	ppm	ASTM D5185m		7	12	14
Calcium	ppm	ASTM D5185m	2000	1819	1621	1662
Phosphorus	ppm	ASTM D5185m	400	359	311	337
Zinc	ppm	ASTM D5185m	0	<1	5	4
Sulfur	ppm	ASTM D5185m	1850	2021	1776	2174

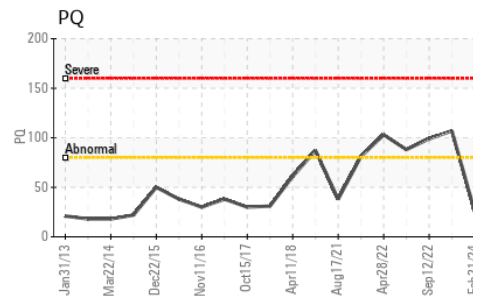
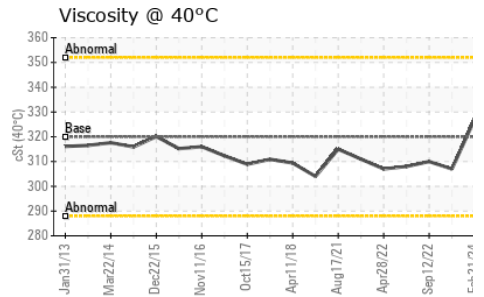
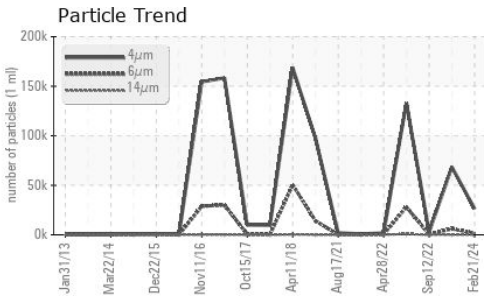
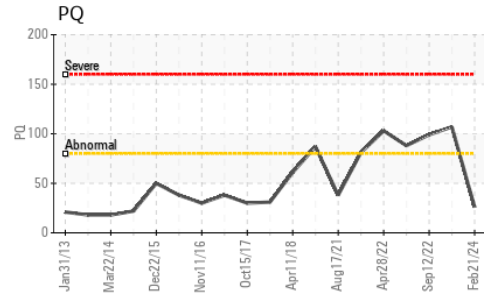
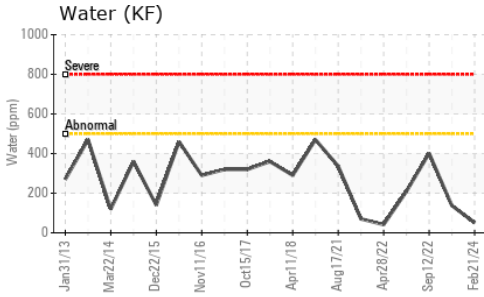
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>50	15	12	10
Sodium	ppm	ASTM D5185m	>20	0	0	6
Potassium	ppm	ASTM D5185m	>20	1	<1	0
Water	%	ASTM D6304	>0.05	0.005	0.013	0.040
ppm Water	ppm	ASTM D6304	>500	51	137.5	401.4

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647		26209	68460	2908
Particles >6µm		ASTM D7647	>2500	1600	▲ 5965	385
Particles >14µm		ASTM D7647	>320	54	51	20
Particles >21µm		ASTM D7647	>80	10	5	6
Particles >38µm		ASTM D7647	>20	1	0	0
Particles >71µm		ASTM D7647	>4	0	0	0
Oil Cleanliness		ISO 4406 (c)	>--/18/15	22/18/13	▲ 23/20/13	19/16/11

FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	1.09	0.52	0.35



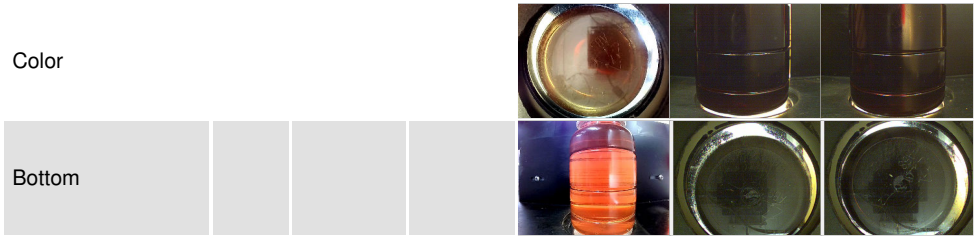
OIL ANALYSIS REPORT



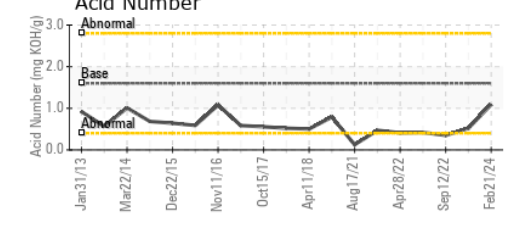
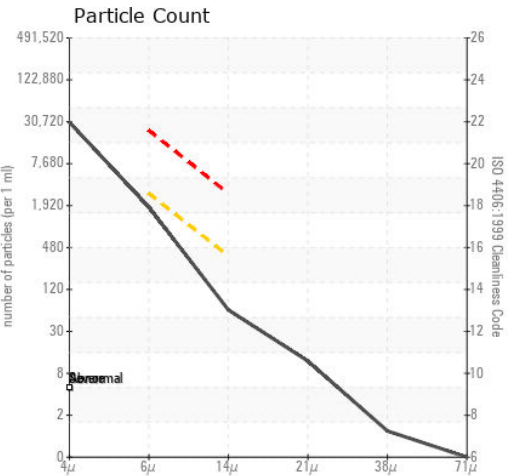
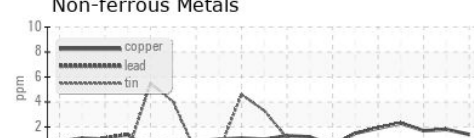
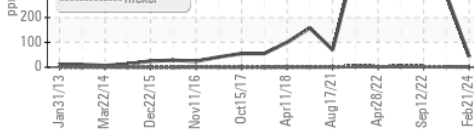
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445 320	327	307	310

SAMPLE IMAGES	method	limit/base	current	history1	history2
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GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX06146581
Lab Number : 06146581
Unique Number : 10976659
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)
Received : 11 Apr 2024
Tested : 12 Apr 2024
Diagnosed : 15 Apr 2024 - Angela Borella

NORDEX USA - BEEBE
 1200 S COUNTY FARM RD
 ITHACA, MI
 US 48847
 Contact: TUCKER WITT
 tucker.witt@constellation.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)