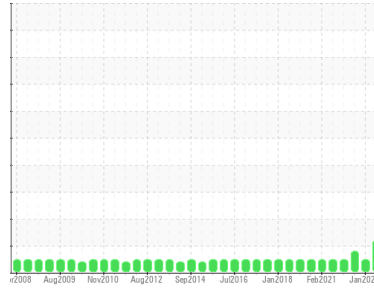




OIL ANALYSIS REPORT

Sample Rating Trend



WEAR



Area
Ravenswood SP-24224
 Machine Id
T3 (S/N 23997)

Component
Wind Turbine Gearbox
 Fluid
MOBIL MOBILGEAR SHC XMP 320 (280 LTR)

DIAGNOSIS

▲ Recommendation

Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.

▲ Wear

Copper ppm levels are abnormal. Bearing and/or bushing wear is indicated.

Contamination

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The water content is negligible. The system and fluid cleanliness is acceptable.

▲ Fluid Condition

Additive levels indicate the addition of a different brand, or type of oil. 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		WC0863462	WC0305872	WC0632674
Sample Date	Client Info		08 Jan 2024	17 Jan 2023	28 Jun 2022
Machine Age	mths	Client Info	0	0	0
Oil Age	mths	Client Info	0	0	0
Oil Changed	Client Info		N/A	N/A	N/A
Sample Status			ABNORMAL	NORMAL	ATTENTION

WEAR METALS

	method	limit/base	current	history1	history2	
PQ	ASTM D8184*	>50	0	0	0	
Iron	ppm	ASTM D5185(m)	>75	35	27	26
Chromium	ppm	ASTM D5185(m)	>5	<1	<1	<1
Nickel	ppm	ASTM D5185(m)	>10	<1	<1	<1
Titanium	ppm	ASTM D5185(m)	>10	0	0	0
Silver	ppm	ASTM D5185(m)		0	0	0
Aluminum	ppm	ASTM D5185(m)	>10	<1	<1	0
Lead	ppm	ASTM D5185(m)	>3	0	0	0
Copper	ppm	ASTM D5185(m)	>5	▲ 5	4	4
Tin	ppm	ASTM D5185(m)	>3	0	<1	0
Antimony	ppm	ASTM D5185(m)	>3	0	<1	0
Vanadium	ppm	ASTM D5185(m)		0	0	0
Beryllium	ppm	ASTM D5185(m)		0	0	0
Cadmium	ppm	ASTM D5185(m)		0	0	0

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185(m)	0	<1	<1	<1
Barium	ppm	ASTM D5185(m)		0	0	0
Molybdenum	ppm	ASTM D5185(m)	0	0	0	0
Manganese	ppm	ASTM D5185(m)		0	0	0
Magnesium	ppm	ASTM D5185(m)		<1	<1	<1
Calcium	ppm	ASTM D5185(m)	0	<1	0	0
Phosphorus	ppm	ASTM D5185(m)	485	▲ 270	314	289
Zinc	ppm	ASTM D5185(m)	0	31	23	18
Sulfur	ppm	ASTM D5185(m)		3344	3557	3508
Lithium	ppm	ASTM D5185(m)		<1	<1	<1

CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185(m)	>40	1	2	3
Sodium	ppm	ASTM D5185(m)	>10	0	<1	<1
Potassium	ppm	ASTM D5185(m)	>20	<1	<1	<1
Water	%	ASTM D6304*	>0.02	0.003	0.005	0.010
ppm Water	ppm	ASTM D6304*	>200	36	55.3	102.0

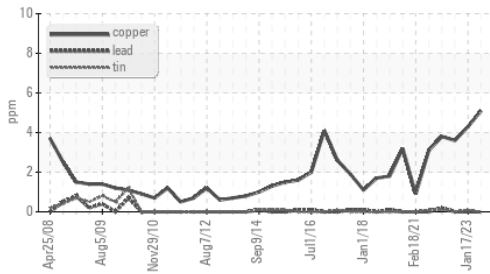
INFRA-RED

	method	limit/base	current	history1	history2	
Soot %	%	ASTM D7844*		0	0	0
Nitration	Abs/cm	ASTM D7624*		2.3	2.5	2.3
Sulfation	Abs/.1mm	ASTM D7415*		48.0	25.8	45.4

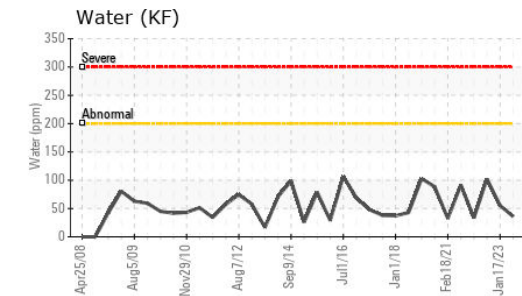
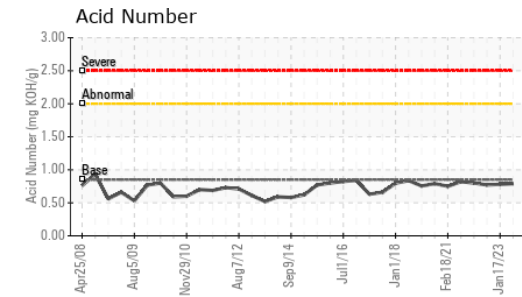
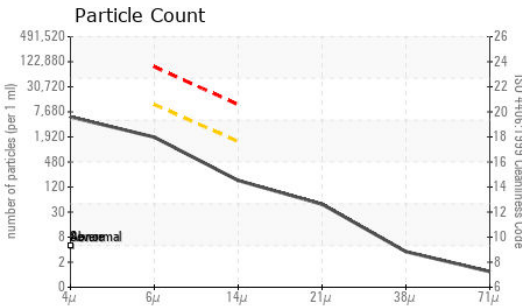
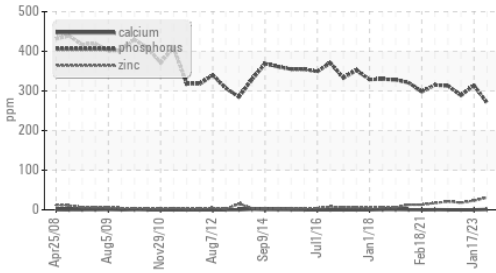


OIL ANALYSIS REPORT

▲ Non-ferrous Metals



▲ Additives



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Vestas American Wind Technology Inc.
Sample No. : WC0863462 **Received** : 12 Jan 2024
Lab Number : 02608636 **Diagnosed** : 16 Jan 2024
Unique Number : 5709722 **Diagnostician** : Bill Quesnel
Test Package : IND 2 (Additional Tests: FT-IR, KF, KV100, PQ, TAN Man, VI)

To discuss this sample report, contact Customer Service at 1-800-268-2131.
 Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
 Validity of results and interpretation are based on the sample and information as supplied.

FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		5067	1172	31109
Particles >6µm	ASTM D7647	>10000	1658	283	▲ 13511
Particles >14µm	ASTM D7647	>1300	152	23	54
Particles >21µm	ASTM D7647	>320	41	7	12
Particles >38µm	ASTM D7647	>80	3	0	1
Particles >71µm	ASTM D7647	>20	1	0	1
Oil Cleanliness	ISO 4406 (c)	>--/20/17	20/18/14	17/15/12	▲ 22/21/13

FLUID DEGRADATION	method	limit/base	current	history1	history2
Oxidation	Abs./1mm ASTM D7414*		55.6	20.6	50.9
Acid Number (AN)	mg KOH/g ASTM D974*	0.85	0.79	0.78	0.77

VISUAL	method	limit/base	current	history1	history2
White Metal	scalar Visual*	NONE	NONE	NONE	NONE
Yellow Metal	scalar Visual*	NONE	NONE	NONE	NONE
Precipitate	scalar Visual*	NONE	NONE	NONE	NONE
Silt	scalar Visual*	NONE	NONE	NONE	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*	>0.02	NEG	NEG	NEG
Free Water	scalar Visual*		NEG	NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt ASTM D7279(m)	335	301	301	301
Visc @ 100°C	cSt ASTM D7279(m)	38.3	34.4	34.3	34.3
Viscosity Index (VI)	Scale ASTM D2270*	164	159	158	158

SAMPLE IMAGES

