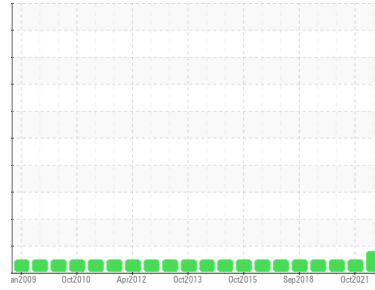




PROBLEM SUMMARY

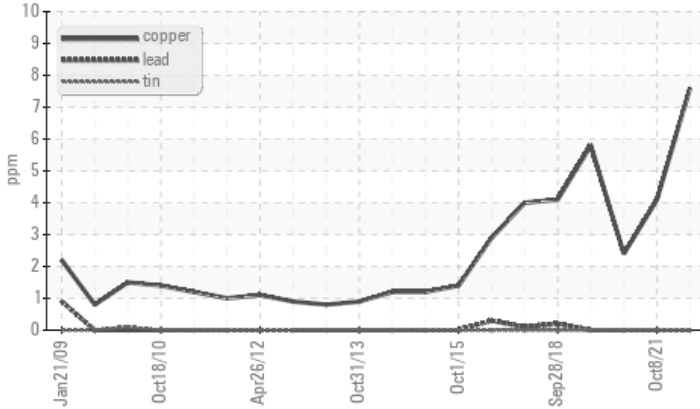
Sample Rating Trend



Area
Saugen Shores SP-17701
 Machine Id
04K05
 Component
Wind Turbine Gearbox
 Fluid
MOBIL MOBILGEAR SHC XMP 320 (260 LTR)

COMPONENT CONDITION SUMMARY

▲ Non-ferrous Metals



RECOMMENDATION

We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS

Sample Status		ABNORMAL	NORMAL	NORMAL
Copper	ppm ASTM D5185(m) >5	▲ 8	4	2

Customer Id: VESTAS
 Sample No.: WC0835244
 Lab Number: 02590756
 Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data:
 Bill Quesnel CLS, OMA II, MLA-III, LLA-I +1
 (289)291-4641 x4641
Bill.Quesnel@wearcheck.com

To change component or sample information:
 Gloria Gonzalez +1 (289)291-4643 x4643
gloria.gonzalez@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Resample	---	---	?	We recommend an early resample to monitor this condition.

HISTORICAL DIAGNOSIS

08 Oct 2021 Diag: Kevin Marson

NORMAL



Resample at the next service interval to monitor. All component wear rates are normal. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The water content is negligible. The system and fluid cleanliness is acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report



16 Oct 2020 Diag: Kevin Marson

NORMAL



Resample at the next service interval to monitor. All component wear rates are normal. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The water content is negligible. The system and fluid cleanliness is acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report



24 Sep 2019 Diag: Kevin Marson

NORMAL



Resample at the next service interval to monitor. All component wear rates are normal. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The water content is negligible. The system and fluid cleanliness is acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

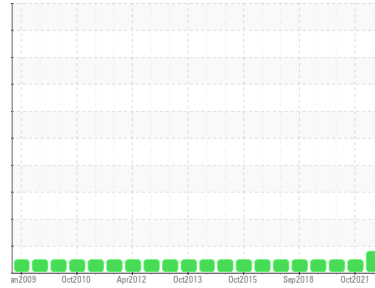
view report





OIL ANALYSIS REPORT

Sample Rating Trend



WEAR



Area
Saugen Shores SP-17701

Machine ID
04K05

Component
Wind Turbine Gearbox

Fluid
MOBIL MOBILGEAR SHC XMP 320 (260 LTR)

DIAGNOSIS

▲ Recommendation

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

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		WC0835244	WC0546326	WC0419200
Sample Date	Client Info		04 Oct 2023	08 Oct 2021	16 Oct 2020
Machine Age	yrs	Client Info	15	13	12
Oil Age	yrs	Client Info	15	13	12
Oil Changed	Client Info		Not Changed	Not Changed	Not Changed
Sample Status			ABNORMAL	NORMAL	NORMAL

WEAR METALS

	method	limit/base	current	history1	history2
PQ	ASTM D8184*	>50	0	0	0
Iron	ppm	ASTM D5185(m)	>75	17	13
Chromium	ppm	ASTM D5185(m)	>5	0	<1
Nickel	ppm	ASTM D5185(m)	>10	<1	<1
Titanium	ppm	ASTM D5185(m)	>10	0	0
Silver	ppm	ASTM D5185(m)		<1	<1
Aluminum	ppm	ASTM D5185(m)	>10	0	<1
Lead	ppm	ASTM D5185(m)	>15	0	0
Copper	ppm	ASTM D5185(m)	>5	▲ 8	4
Tin	ppm	ASTM D5185(m)	>10	0	0
Antimony	ppm	ASTM D5185(m)	>5	0	<1
Vanadium	ppm	ASTM D5185(m)		0	0
Beryllium	ppm	ASTM D5185(m)		0	0
Cadmium	ppm	ASTM D5185(m)		0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	0	1	1
Barium	ppm	ASTM D5185(m)		0	0
Molybdenum	ppm	ASTM D5185(m)	0	0	0
Manganese	ppm	ASTM D5185(m)		0	0
Magnesium	ppm	ASTM D5185(m)		0	<1
Calcium	ppm	ASTM D5185(m)	0	0	<1
Phosphorus	ppm	ASTM D5185(m)	485	303	360
Zinc	ppm	ASTM D5185(m)	0	17	9
Sulfur	ppm	ASTM D5185(m)		3506	3733
Lithium	ppm	ASTM D5185(m)		<1	<1

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>40	16	11
Sodium	ppm	ASTM D5185(m)	>10	<1	0
Potassium	ppm	ASTM D5185(m)	>20	<1	<1
Water	%	ASTM D6304*	>0.02	0.005	0.009
ppm Water	ppm	ASTM D6304*	>200	52.0	91.7

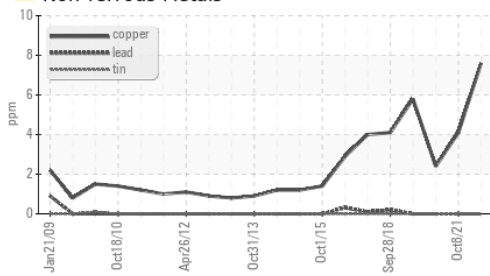
INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*		0	0
Nitration	Abs/cm	ASTM D7624*		2.2	2.2
Sulfation	Abs/.1mm	ASTM D7415*		47.3	47.0

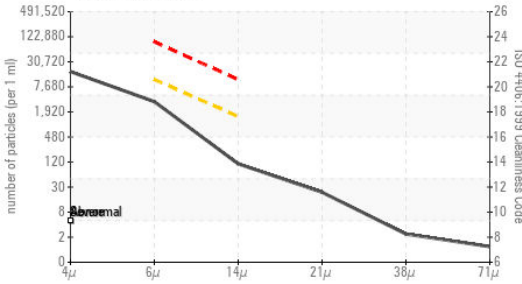


OIL ANALYSIS REPORT

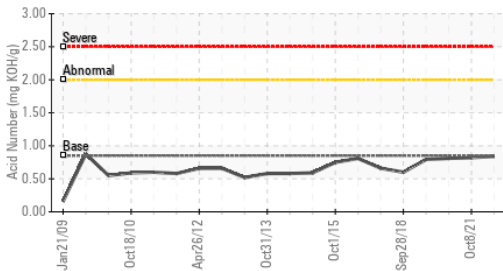
▲ Non-ferrous Metals



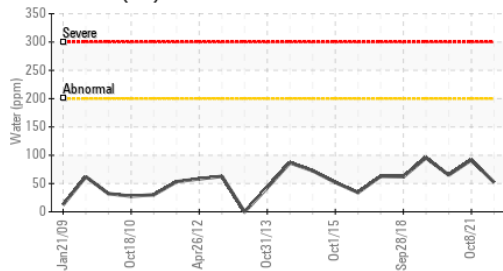
Particle Count



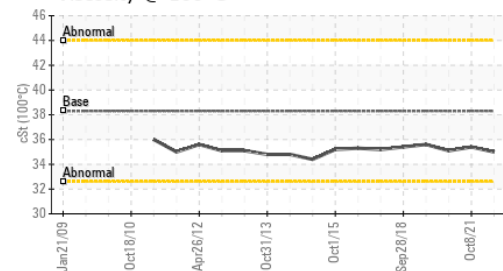
Acid Number



Water (KF)



Viscosity @ 100°C



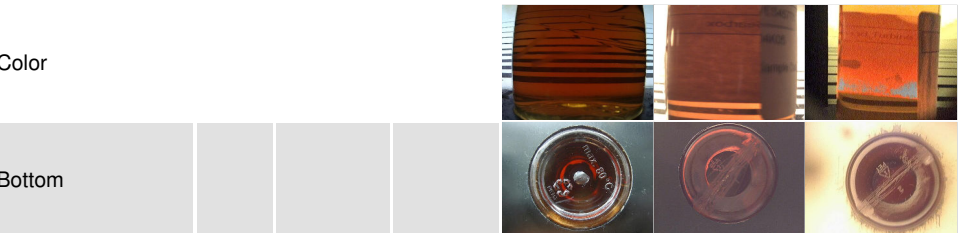
FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		15525	3448	3099
Particles >6µm	ASTM D7647	>10000	2964	858	572
Particles >14µm	ASTM D7647	>1300	96	70	46
Particles >21µm	ASTM D7647	>320	20	19	14
Particles >38µm	ASTM D7647	>80	2	0	2
Particles >71µm	ASTM D7647	>20	1	0	0
Oil Cleanliness	ISO 4406 (c)	>--/20/17	21/19/14	19/17/13	19/16/13

FLUID DEGRADATION	method	limit/base	current	history1	history2
Oxidation	Abs./1mm	ASTM D7414*	54.6	53.3	---
Acid Number (AN)	mg KOH/g	ASTM D974*	0.84	0.82	0.81

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*	>0.02	NEG	NEG
Free Water	scalar	Visual*		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	335	308	310
Visc @ 100°C	cSt	ASTM D7279(m)	38.3	35.0	35.4
Viscosity Index (VI)	Scale	ASTM D2270*	164	159	160

SAMPLE IMAGES



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Vestas American Wind Technology Inc.
Sample No. : WC0835244 **Received** : 20 Oct 2023
Lab Number : **02590756** **Diagnosed** : 23 Oct 2023
Unique Number : 5659822 **Diagnostician** : Bill Quesnel
Test Package : IND 2 (Additional Tests: FT-IR, KF, KV100, PQ, TAN Man, VI)

1417 NW Everett Street
 Portland, OR
 US 97209
 Contact: Nicole Philippi
 NiPhi@vestas.com
 T: (503)327-7683
 F: (503)327-0247

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.