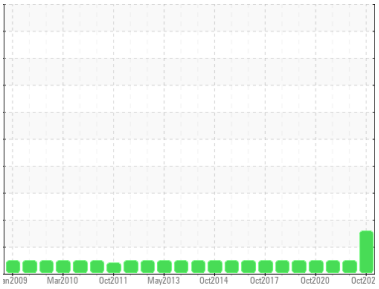
PROBLEM SUMMARY

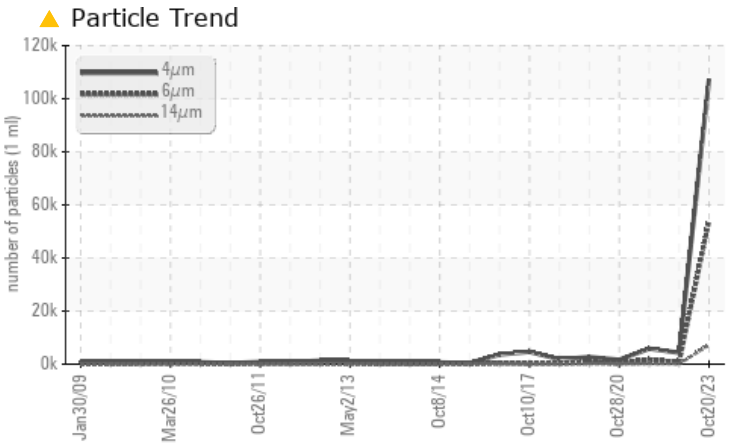
Sample Rating Trend



ISO

Area
Saugeen Shores SP-17701
Machine ID
04K14
Component
Wind Turbine Gearbox
Fluid
MOBIL MOBILGEAR SHC XMP 320 (320 LTR)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS

Sample Status				ABNORMAL	NORMAL	NORMAL
Particles >6µm		ASTM D7647	>10000	▲ **53930**	665	1786
Particles >14µm		ASTM D7647	>1300	▲ **7277**	48	142
Particles >21µm		ASTM D7647	>320	▲ **1902**	12	32
Oil Cleanliness		ISO 4406 (c)	>--/20/17	▲ **24/23/20**	19/17/13	20/18/14

Customer Id: VESTAS
Sample No.: WC0835306
Lab Number: 02591543
Test Package: IND 2

To manage this report scan the QR code

To discuss the diagnosis or test data:
Kevin Marson +1 (289)291-4644 x4644
Kevin.Marson@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
Change Filter	---	---	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.
Resample	---	---	?	We recommend an early resample to monitor this condition.
Filter Fluid	---	---	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.

HISTORICAL DIAGNOSIS

17 Oct 2022 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

25 Oct 2021 Diag: Bill Quesnel

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

28 Oct 2020 Diag: Kevin Marson

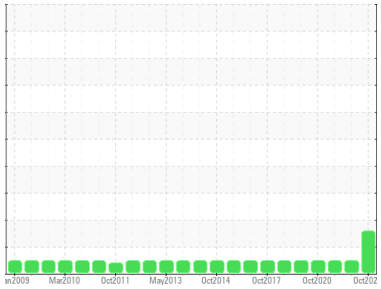
NORMAL

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

OIL ANALYSIS REPORT

Sample Rating Trend



ISO

Area
Saugeen Shores SP-17701
Machine ID
04K14
Component
Wind Turbine Gearbox
Fluid
MOBIL MOBILGEAR SHC XMP 320 (320 LTR)

DIAGNOSIS

Recommendation

We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of particulates (2 to 100 microns in size) present in the oil. The water content is negligible. The system cleanliness is above the acceptable limit for the target ISO 4406 cleanliness code.

Fluid Condition

The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0835306**	WC0632935	WC0546333
Sample Date		Client Info		**20 Oct 2023**	17 Oct 2022	25 Oct 2021
Machine Age	yrs	Client Info		**15**	14	13
Oil Age	yrs	Client Info		**15**	14	13
Oil Changed		Client Info		**Not Changd**	Not Changd	Filtered
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	**13**	10	1
Chromium	ppm	ASTM D5185(m)	>5	**0**	0	0
Nickel	ppm	ASTM D5185(m)	>10	**<1**	0	0
Titanium	ppm	ASTM D5185(m)	>10	**0**	0	0
Silver	ppm	ASTM D5185(m)		**<1**	0	<1
Aluminum	ppm	ASTM D5185(m)	>10	**0**	<1	0
Lead	ppm	ASTM D5185(m)	>15	**<1**	0	0
Copper	ppm	ASTM D5185(m)	>5	**2**	2	1
Tin	ppm	ASTM D5185(m)	>10	**0**	0	<1
Antimony	ppm	ASTM D5185(m)	>5	**0**	0	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

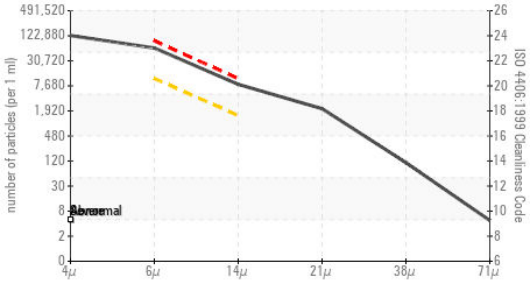
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	0	**1**	<1	<1
Barium	ppm	ASTM D5185(m)		**0**	0	0
Molybdenum	ppm	ASTM D5185(m)	0	**0**	0	0
Manganese	ppm	ASTM D5185(m)		**0**	0	0
Magnesium	ppm	ASTM D5185(m)		**<1**	0	0
Calcium	ppm	ASTM D5185(m)	0	**0**	0	<1
Phosphorus	ppm	ASTM D5185(m)	485	**336**	368	413
Zinc	ppm	ASTM D5185(m)	0	**21**	6	2
Sulfur	ppm	ASTM D5185(m)		**3704**	3714	3922
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>40	**5**	6	20
Sodium	ppm	ASTM D5185(m)	>10	**1**	<1	0
Potassium	ppm	ASTM D5185(m)	>20	**<1**	0	<1
Water	%	ASTM D6304*	>0.02	**0.01**	0.006	0.007
ppm Water	ppm	ASTM D6304*	>200	**100.0**	65.9	73.1

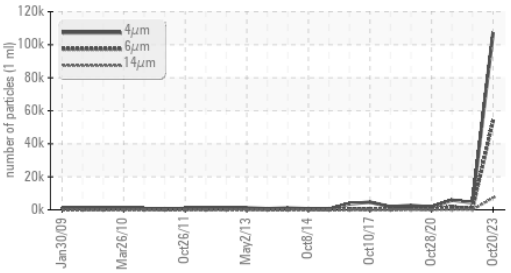
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*		**0**	0	0
Nitration	Abs/cm	ASTM D7624*		**2.1**	2.0	2.0
Sulfation	Abs/.1mm	ASTM D7415*		**47.3**	31.1	48.1

OIL ANALYSIS REPORT

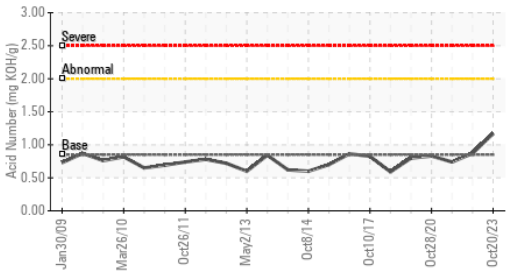
Particle Count



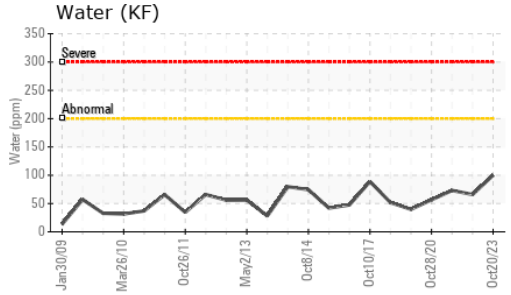
Particle Trend



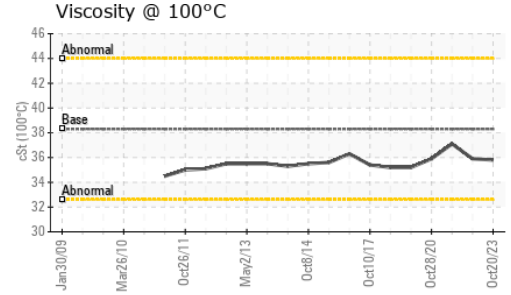
Acid Number



Water (KF)



Viscosity @ 100°C



FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647		**107279**	4290	5841
Particles >6µm		ASTM D7647	>10000	▲ **53930**	665	1786
Particles >14µm		ASTM D7647	>1300	▲ **7277**	48	142
Particles >21µm		ASTM D7647	>320	▲ **1902**	12	32
Particles >38µm		ASTM D7647	>80	**97**	1	1
Particles >71µm		ASTM D7647	>20	**4**	0	0
Oil Cleanliness		ISO 4406 (c)	>--/20/17	▲ **24/23/20**	19/17/13	20/18/14

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*		**54.9**	27.5	54.4
Acid Number (AN)	mg KOH/g	ASTM D974*	0.85	**1.17**	0.87	0.74

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	**VLITE**	NONE	VLITE
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	**315**	318	328
Visc @ 100°C	cSt	ASTM D7279(m)	38.3	**35.8**	35.9	37.1
Viscosity Index (VI)	Scale	ASTM D2270*	164	**160**	159	161

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 **Vestas American Wind Technology Inc.**
Sample No. : WC0835306 **Received** : 24 Oct 2023 1417 NW Everett Street
Lab Number : 02591543 **Diagnosed** : 26 Oct 2023 Portland, OR
Unique Number : 5668622 **Diagnostician** : Kevin Marson US 97209
Test Package : IND 2 (Additional Tests: FT-IR, KF, KV100, PQ, TAN Man, VI) Contact: Nicole Philippi

To discuss this sample report, contact Customer Service at 1-800-268-2131. NiPhi@vestas.com
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. T: (503)327-7683
Validity of results and interpretation are based on the sample and information as supplied. F: (503)327-0247