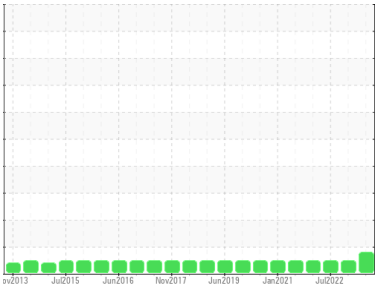
PROBLEM SUMMARY

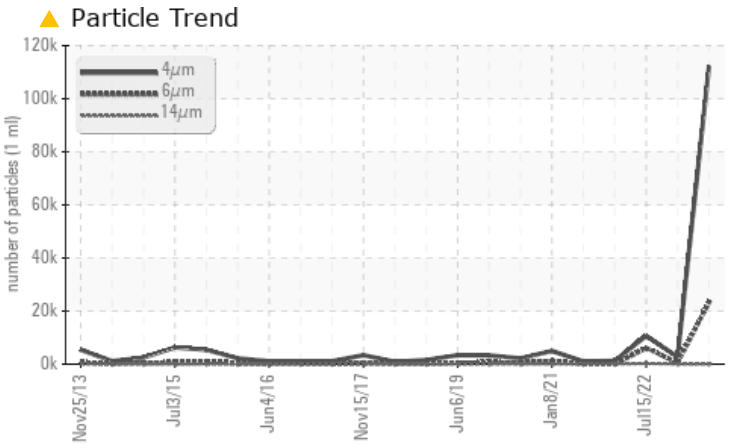
Sample Rating Trend



ISO

Area
Capital Power PDN - SC011776
Machine Id
T513 (S/N 00021147ZD)
Component
Wind Turbine Gearbox
Fluid
MOBIL MOBILGEAR SHC XMP 320 (395 LTR)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

We recommend you service the filters on this component. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS

Sample Status				**ABNORMAL**	NORMAL	NORMAL
Particles >6µm		ASTM D7647	>10000	▲ **23237**	548	6098
Oil Cleanliness		ISO 4406 (c)	>--/20/17	▲ **24/22/11**	19/16/13	21/20/15

Customer Id: VESTAS
Sample No.: WC0824661
Lab Number: 02576943
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 recommend you service the filters on this component.
Resample	---	---	?	We recommend an early resample to monitor this condition.

HISTORICAL DIAGNOSIS

09 Jan 2023 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

15 Jul 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. NOTE: An increase in the particle count is noted. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

21 Jan 2022 Diag: Kevin Marson

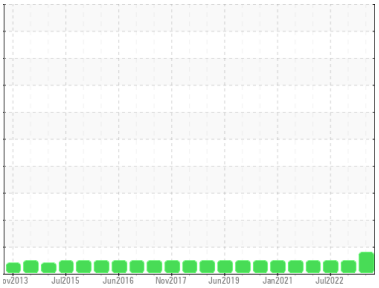
NORMAL

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

OIL ANALYSIS REPORT

Sample Rating Trend



ISO

Area
Capital Power PDN - SC011776
Machine Id
T513 (S/N 00021147ZD)
Component
Wind Turbine Gearbox
Fluid
MOBIL MOBILGEAR SHC XMP 320 (395 LTR)

DIAGNOSIS

Recommendation

We recommend you service the filters on this component. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of silt (particulates < 14 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		**WC0824661**	WC0768687	WC0720393
Sample Date		Client Info		**09 Aug 2023**	09 Jan 2023	15 Jul 2022
Machine Age	hrs	Client Info		**0**	0	0
Oil Age	hrs	Client Info		**0**	0	0
Oil Changed		Client Info		**N/A**	N/A	N/A
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	**27**	30	26
Chromium	ppm	ASTM D5185(m)	>5	**<1**	<1	<1
Nickel	ppm	ASTM D5185(m)	>10	**0**	<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	**0**	<1	<1
Lead	ppm	ASTM D5185(m)	>3	**0**	0	<1
Copper	ppm	ASTM D5185(m)	>5	**2**	4	4
Tin	ppm	ASTM D5185(m)	>3	**0**	0	0
Antimony	ppm	ASTM D5185(m)	>3	**0**	<1	<1
Vanadium	ppm	ASTM D5185(m)		**0**	0	0
Beryllium	ppm	ASTM D5185(m)		**0**	0	0
Cadmium	ppm	ASTM D5185(m)		**0**	0	0

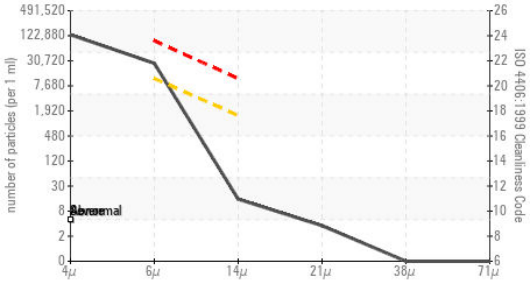
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	0	**<1**	<1	<1
Barium	ppm	ASTM D5185(m)		**0**	0	0
Molybdenum	ppm	ASTM D5185(m)	0	**<1**	0	0
Manganese	ppm	ASTM D5185(m)		**<1**	<1	<1
Magnesium	ppm	ASTM D5185(m)		**0**	0	0
Calcium	ppm	ASTM D5185(m)	0	**<1**	0	0
Phosphorus	ppm	ASTM D5185(m)	485	**333**	343	352
Zinc	ppm	ASTM D5185(m)	0	**13**	22	8
Sulfur	ppm	ASTM D5185(m)		**3627**	3806	3730
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>40	**3**	3	9
Sodium	ppm	ASTM D5185(m)	>10	**<1**	1	1
Potassium	ppm	ASTM D5185(m)	>20	**<1**	<1	<1
Water	%	ASTM D6304*	>0.02	**0.011**	0.004	0.005
ppm Water	ppm	ASTM D6304*	>200	**111.0**	42.1	57.7

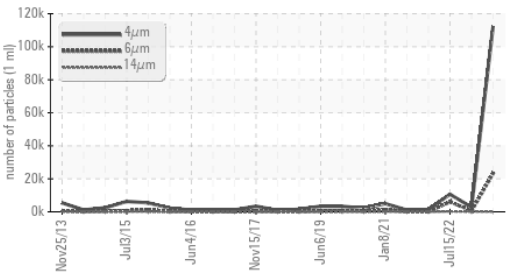
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*		**0**	0	0
Nitration	Abs/cm	ASTM D7624*		**2.3**	2.4	2.4
Sulfation	Abs/.1mm	ASTM D7415*		**50.0**	29.5	27.0

OIL ANALYSIS REPORT

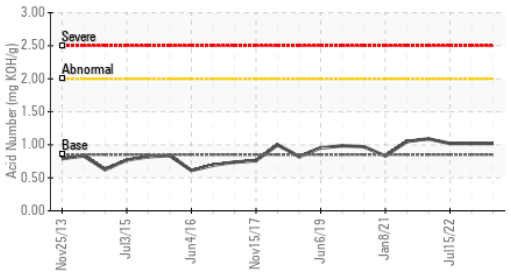
Particle Count



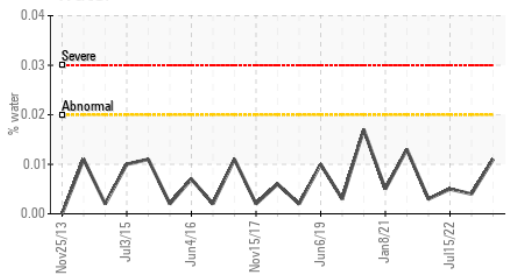
Particle Trend



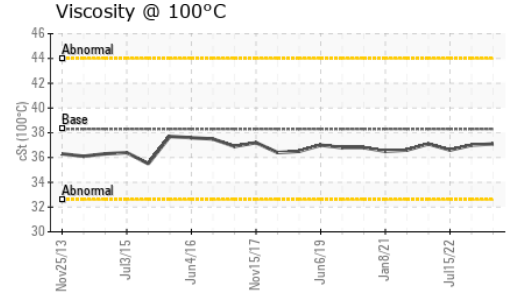
Acid Number



Water



Viscosity @ 100°C



FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647		**112199**	2743	10659
Particles >6µm		ASTM D7647	>10000	▲ **23237**	548	6098
Particles >14µm		ASTM D7647	>1300	**13**	41	245
Particles >21µm		ASTM D7647	>320	**3**	10	36
Particles >38µm		ASTM D7647	>80	**0**	2	1
Particles >71µm		ASTM D7647	>20	**0**	2	0
Oil Cleanliness		ISO 4406 (c)	>--/20/17	▲ **24/22/11**	19/16/13	21/20/15

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*		**56.5**	27.2	25.2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.85	**1.02**	1.02	1.02

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	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	**324**	324	323
Visc @ 100°C	cSt	ASTM D7279(m)	38.3	**37.1**	37.0	36.6
Viscosity Index (VI)	Scale	ASTM D2270*	164	**163**	162	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. : WC0824661 **Received** : 18 Aug 2023 1417 NW Everett Street
Lab Number : 02576943 **Diagnosed** : 21 Aug 2023 Portland, OR
Unique Number : 5630003 **Diagnostician** : Kevin Marson US 97209
Test Package : IND 2 (Additional Tests: FT-IR, KF, KV100, PQ, TAN Man, VI) Contact: Adam Meyer

To discuss this sample report, contact Customer Service at 1-800-268-2131. admey@vestas.com
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. T: (519)983-0374
Validity of results and interpretation are based on the sample and information as supplied. F: (503)327-2001