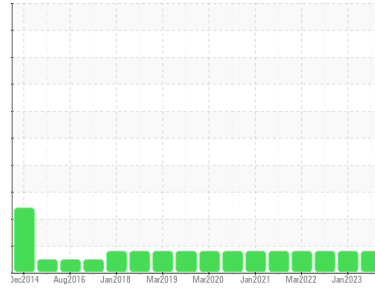




# PROBLEM SUMMARY

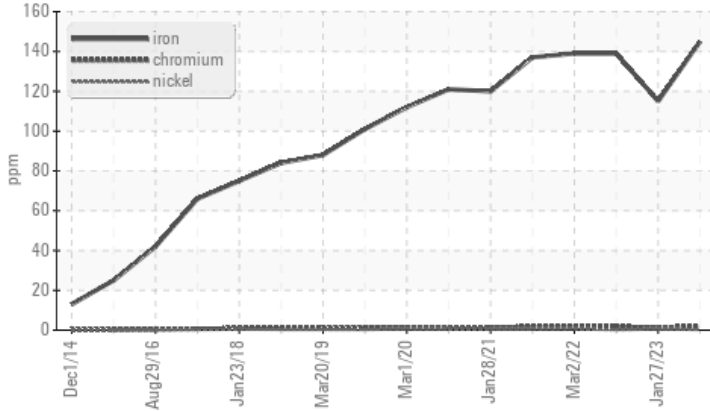
Sample Rating Trend



Area  
**SkyWay8/311325 Grey Road 8**  
 Machine Id  
**202630 SkyWay8 T3**  
 Component  
**Wind Turbine Gearbox**  
 Fluid  
**CASTROL OPTIGEAR SYNTHETIC CT 320 (395 LTR)**

## COMPONENT CONDITION SUMMARY

### ▲ Ferrous Alloys



### RECOMMENDATION

We recommend an early resample to monitor this condition.

### PROBLEMATIC TEST RESULTS

Sample Status	ABNORMAL	ABNORMAL	ABNORMAL
Iron ppm ASTM D5185(m) >75	▲ 145	▲ 115	▲ 139

Customer Id: VESTAS  
 Sample No.: WC0783140  
 Lab Number: 02576951  
 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](mailto:Kevin.Marson@wearcheck.com)

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

**RECOMMENDED ACTIONS**

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

**HISTORICAL DIAGNOSIS**

**27 Jan 2023 Diag: Bill Quesnel**

**WEAR**



We recommend an early resample to monitor this condition. Iron ppm levels are abnormal. The low ferrous density (PQ) index indicates the wear metal levels are due to corrosion. 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 Aug 2022 Diag: Kevin Marson**

**WEAR**



We recommend an early resample to monitor this condition. Iron ppm levels are abnormal. The low ferrous density (PQ) index indicates the wear metal levels are due to corrosion. 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](#)



**02 Mar 2022 Diag: Kevin Marson**

**WEAR**



We recommend an early resample to monitor this condition. Iron ppm levels are abnormal. The low ferrous density (PQ) index indicates the wear metal levels are due to corrosion. 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.

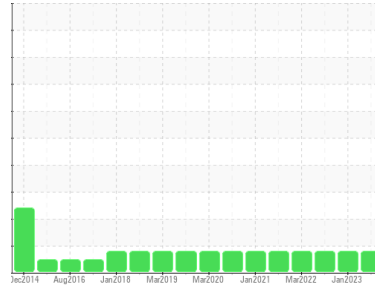
[view report](#)





# OIL ANALYSIS REPORT

Sample Rating Trend



**WEAR**



Area  
**SkyWay8/311325 Grey Road 8**  
 Machine Id  
**202630 SkyWay8 T3**

Component  
**Wind Turbine Gearbox**  
 Fluid  
**CASTROL OPTIGEAR SYNTHETIC CT 320 (395 LTR)**

## DIAGNOSIS

**Recommendation**  
 We recommend an early resample to monitor this condition.

**Wear**  
 Iron ppm levels are abnormal. The low ferrous density (PQ) index indicates the wear metal levels are due to corrosion.

**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		<b>WC0783140</b>	WC0305897	WC0305839
Sample Date	Client Info		<b>14 Aug 2023</b>	27 Jan 2023	15 Aug 2022
Machine Age	mths	Client Info	<b>0</b>	0	0
Oil Age	mths	Client Info	<b>0</b>	0	0
Oil Changed	Client Info		<b>N/A</b>	N/A	N/A
Sample Status			<b>ABNORMAL</b>	ABNORMAL	ABNORMAL

## WEAR METALS

	method	limit/base	current	history1	history2
PQ	ASTM D8184*	>50	<b>0</b>	0	0
Iron	ppm	ASTM D5185(m)	>75	<b>▲ 145</b>	▲ 115
Chromium	ppm	ASTM D5185(m)	>5	<b>2</b>	1
Nickel	ppm	ASTM D5185(m)	>10	<b>&lt;1</b>	<1
Titanium	ppm	ASTM D5185(m)	>10	<b>0</b>	0
Silver	ppm	ASTM D5185(m)		<b>0</b>	0
Aluminum	ppm	ASTM D5185(m)	>10	<b>&lt;1</b>	<1
Lead	ppm	ASTM D5185(m)	>3	<b>2</b>	2
Copper	ppm	ASTM D5185(m)	>10	<b>&lt;1</b>	<1
Tin	ppm	ASTM D5185(m)	>3	<b>0</b>	0
Antimony	ppm	ASTM D5185(m)	>3	<b>0</b>	<1
Vanadium	ppm	ASTM D5185(m)		<b>0</b>	0
Beryllium	ppm	ASTM D5185(m)		<b>0</b>	0
Cadmium	ppm	ASTM D5185(m)		<b>0</b>	0

## ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1
Barium	ppm	ASTM D5185(m)		<b>0</b>	0
Molybdenum	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1
Manganese	ppm	ASTM D5185(m)		<b>2</b>	2
Magnesium	ppm	ASTM D5185(m)		<b>0</b>	<1
Calcium	ppm	ASTM D5185(m)		<b>6</b>	5
Phosphorus	ppm	ASTM D5185(m)		<b>264</b>	278
Zinc	ppm	ASTM D5185(m)		<b>31</b>	40
Sulfur	ppm	ASTM D5185(m)		<b>4788</b>	5039
Lithium	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1

## CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>40	<b>6</b>	12
Sodium	ppm	ASTM D5185(m)	>30	<b>10</b>	10
Potassium	ppm	ASTM D5185(m)	>20	<b>2</b>	2
Water	%	ASTM D6304*	>0.02	<b>0.005</b>	0.002
ppm Water	ppm	ASTM D6304*	>200	<b>54.7</b>	21.2

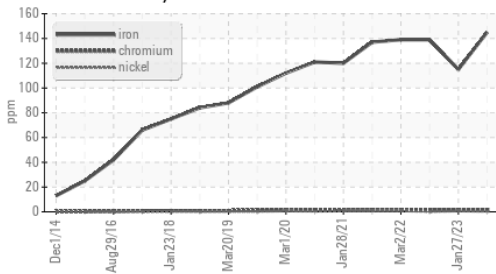
## INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*		<b>0</b>	0
Nitration	Abs/cm	ASTM D7624*		<b>3.1</b>	2.7
Sulfation	Abs/.1mm	ASTM D7415*		<b>12.5</b>	13.8

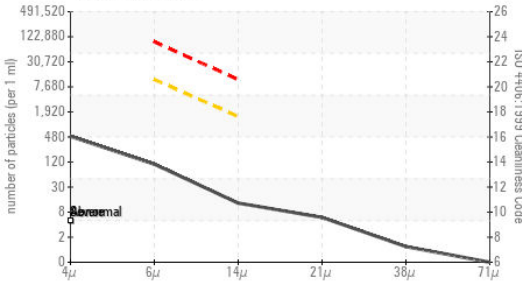


# OIL ANALYSIS REPORT

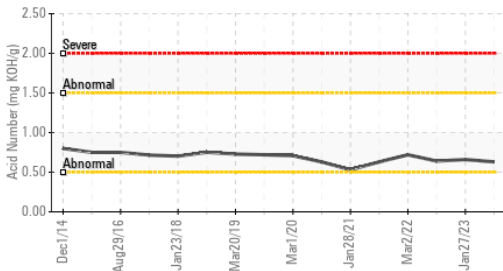
## ▲ Ferrous Alloys



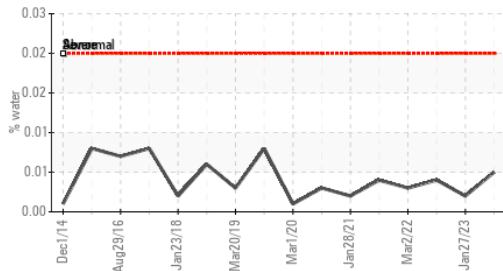
## Particle Count



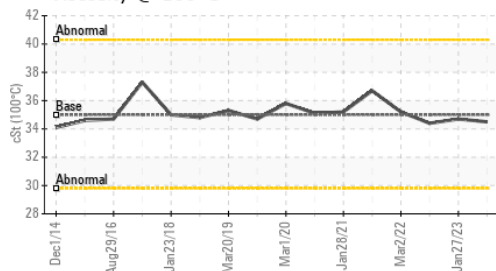
## Acid Number



## Water



## Viscosity @ 100°C



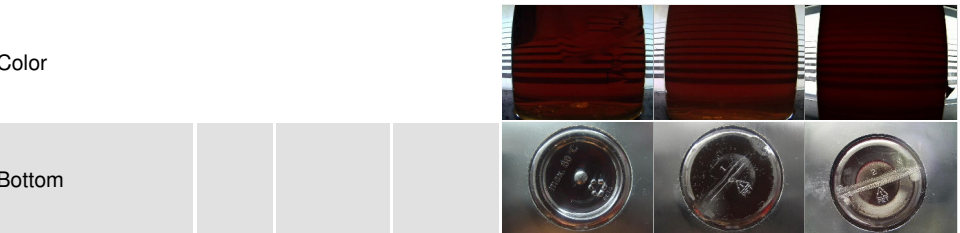
FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		<b>437</b>	2268	140
Particles >6µm	ASTM D7647	>10000	<b>94</b>	684	21
Particles >14µm	ASTM D7647	>1300	<b>11</b>	50	3
Particles >21µm	ASTM D7647	>320	<b>5</b>	14	2
Particles >38µm	ASTM D7647	>80	<b>1</b>	1	1
Particles >71µm	ASTM D7647	>20	<b>0</b>	0	1
Oil Cleanliness	ISO 4406 (c)	>--/20/17	<b>16/14/11</b>	18/17/13	14/12/9

FLUID DEGRADATION	method	limit/base	current	history1	history2
Oxidation	Abs./1mm	ASTM D7414*	<b>7.0</b>	4.7	7.1
Acid Number (AN)	mg KOH/g	ASTM D974*	<b>0.63</b>	0.66	0.64

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

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	<b>329</b>	330	332
Visc @ 100°C	cSt	ASTM D7279(m)	<b>34.5</b>	34.7	34.4
Viscosity Index (VI)	Scale	ASTM D2270*	<b>148</b>	149	147

## SAMPLE IMAGES



ISO 17025:2017  
Accredited  
Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Vestas American Wind Technology Inc.  
**Sample No.** : WC0783140 **Received** : 18 Aug 2023  
**Lab Number** : **02576951** **Diagnosed** : 21 Aug 2023  
**Unique Number** : 5630011 **Diagnostician** : Kevin Marson  
**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.

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