

LAB REPORT

Unit ID **WIND ENERGY SYSTEM**
 Component **Wind turbine - main gear**
 Current sample number **1703568**

广州德优检测技术有限公司
 OELCHECK CHINA LTD
 Headquarter Building 1, Room 302
 Panyu Avenue 555
 511400, Panyu District of Guangzhou
 P.R. China
 Phone: +86(20)3902-6228
 总机: +86(20)3902-6228
 page 1 of 4

OELCHECK China Ltd., Guangzhou

OELCHECK China Ltd.
 Headquarter Building 1/302
 Panyu Avenue 555,
 511400 Panyu District GUANGZHOU Guangdong
 P.R. CHINA

Manufacturer: **NGC**
 Oil brand name: **Mobil Mobilgear SHC XMP 320**

Diagnosis for the current laboratory values


Iron has slightly increased. The additive value differs from the fresh oil value recorded in our database. Viscosity does not conform with the expected values. Possible reasons could be a different oil type or mixture with another oil type. The purity grade shows that the oil is significantly contaminated. I recommend that you change the oil as soon as possible if you have not already done so.

Dipl.-Ing. (FH) Stefan Mitterer (CLS)

Sample Rating



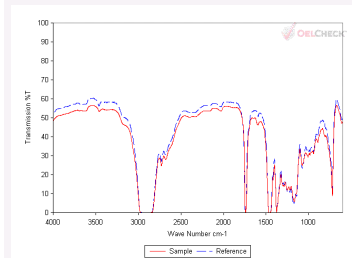
action

ANALYSIS RESULTS			Current sample	Previous samples	
LAB NUMBER			1703568		
SAMPLE RATING					
Date tested			10.08.2015		
Date of sample taken			20.07.2015		
Date of last oil change			-		
Top-up since change			-		
Operating time since change			-		
Total operating time M			74		
Oil changed			-		
WEAR					
Iron	Fe	mg/kg	37		
Chrome	Cr	mg/kg	0		
Tin	Sn	mg/kg	0		
Aluminum	Al	mg/kg	0		
Nickel	Ni	mg/kg	0		
Copper	Cu	mg/kg	4		
Lead	Pb	mg/kg	2		
Manganese	Mn	mg/kg	1		
PQ index	-		< 25		
CONTAMINATION					
Silicon	Si	mg/kg	3		
Potassium	K	mg/kg	4		
Sodium	Na	mg/kg	3		
Water K. F.	ppm		135		
OIL CONDITION					
Viscosity at 40°C	mm²/s		320.97		
Viscosity at 100°C	mm²/s		32.61		
Viscosity index	-		142		
Oxidation	A/cm		-		
ADDITIVES					
Calcium	Ca	mg/kg	31		
Magnesium	Mg	mg/kg	2		
Boron	B	mg/kg	1		
Zinc	Zn	mg/kg	15		
Phosphorus	P	mg/kg	384		
Barium	Ba	mg/kg	2		
Molybdenum	Mo	mg/kg	5		
Sulphur	S	mg/kg	8364		

Bottle and Cap



Infrared Spectrum



Sample on the side



LAB REPORT



广州德优测检测技术有限公司

Unit ID **WIND ENERGY SYSTEM**
 Component **Wind turbine - main gear**
 Current sample number **1703568**

广州德优测检测技术有限公司
 广州市番禺区番禺大道555号
 天安节能科技园总部中心1号楼302室
 邮编: 511400
 总机: +86(20)3902-6228

OELCHECK CHINA LTD
 Headquarter Building 1, Room 302
 Panyu Avenue 555
 511400, Panyu District of Guangzhou
 P.R. China
 Phone: +86(20)3902-6228

page 2 of 4

Manufacturer: **NGC**
 Oil brand name: **Mobil Mobilgear SHC XMP 320**

OELCHECK China Ltd.
 Headquarter Building 1/302
 Panyu Avenue 555,
 511400 Panyu District GUANGZHOU Guangdong
 P.R. CHINA

ANALYSIS RESULTS		Current sample	Previous samples	
LAB NUMBER		1703568		
SAMPLE RATING		!		
Date tested		10.08.2015		
Date of sample taken		20.07.2015		
Date of last oil change		-		
Top-up since change		-		
Operating time since change		-		
Total operating time	M	74		
Oil changed		-		
ADDITIONAL TESTS				
AN / NN	mgKOH/g	0.78		
Cleanliness class	ISO 4406 (1999)	23/20/13		
A: >4µm = ISO >4µm	Particles/100ml	4233946		
B: >6µm = ISO >6µm	Particles/100ml	665129		
C: >14µm = ISO >14µm	Particles/100ml	5544		
D: >21µm	Particles/100ml	308		
E: >38µm	Particles/100ml	0		
F: >70µm	Particles/100ml	0		
Cleanliness class	SAE AS 4059	> 12A		



LAB REPORT



广州德优测检测技术有限公司

Unit ID **WIND ENERGY SYSTEM**
 Component **Wind turbine - main gear**
 Current sample number **1703568**

广州德优测检测技术有限公司
 广州市番禺区番禺大道555号
 天安节能科技园总部中心1号楼302室
 邮编: 511400
 总机: +86(20)3902-6228

OELCHECK CHINA LTD
 Headquarter Building 1, Room 302
 Panyu Avenue 555
 511400, Panyu District of Guangzhou
 P.R. China
 Phone: +86(20)3902-6228
 page 3 of 4

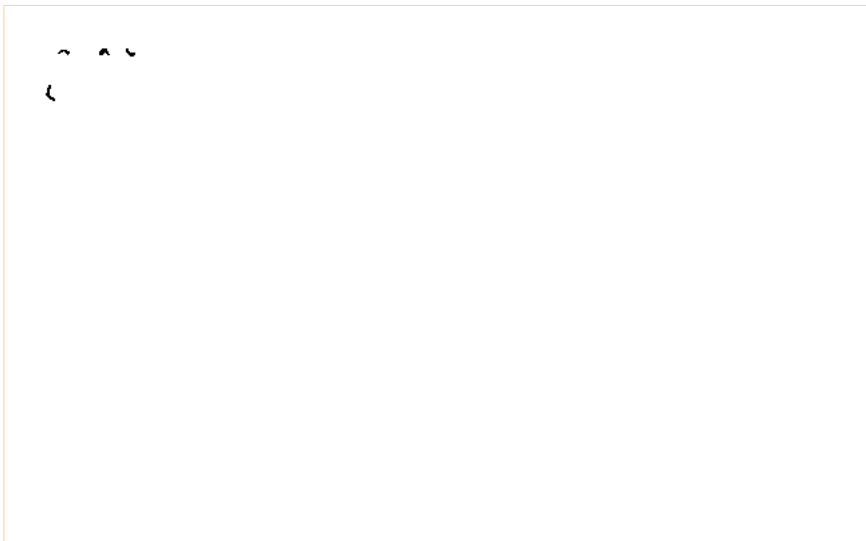
Manufacturer: **NGC**
 Oil brand name: **Mobil Mobilgear SHC XMP 320**

OELCHECK China Ltd.
 Headquarter Building 1/302
 Panyu Avenue 555,
 511400 Panyu District GUANGZHOU Guangdong
 P.R. CHINA

Diagnosis for the optical particle analysis (OPA)

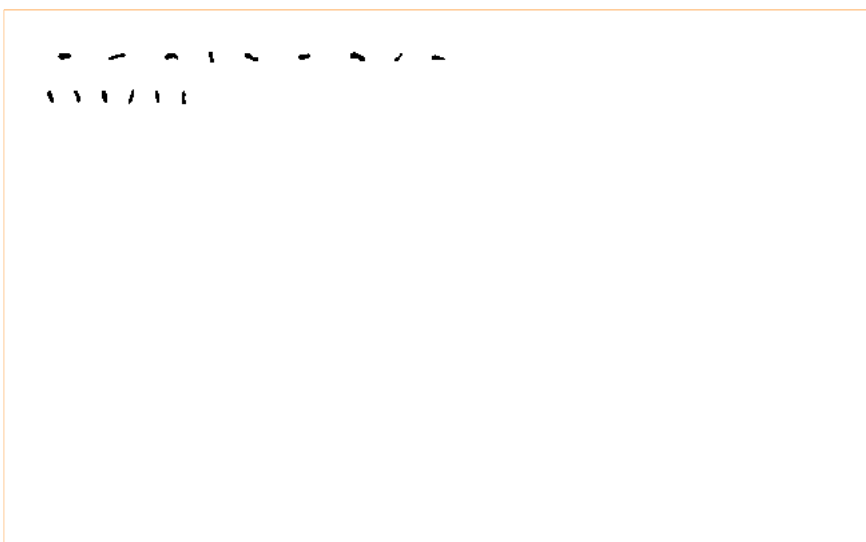
The number of particles typical for sliding wear has increased slightly.

Dipl.-Ing. (FH) Stefan Mitterer (CLS)



Cutting wear
 Caused by solid contaminants

1 scale line corresponds to 100 µm



Sliding wear
 Caused by contact between metal surfaces under high specific load

1 scale line corresponds to 100 µm

ANALYSIS RESULTS		Current sample
LAB NUMBER		1703568
Date tested		10.08.2015
Date of sample taken		20.07.2015
Date of last oil change		-
Top-up since change		-
Operating time since change		-
Total operating time	M	74
Oil changed		-

Particles in the current sample	
Number of particles >= 20 µm acc. to OPA	
Relates to 1ml oil	
Cutting wear	< 20
Sliding wear	46
Fatigue wear	< 20
Non metallic particles	< 20
Unclassified	< 20
Number of particles acc. to ISO 4406 (1999)	
Relates to 100ml oil	
Cleanliness class ISO 4406 (1999)	23/20/13
>4µm	4233946
>6µm	665129
>14µm	5544
>21µm	308
Cleanliness class SAE AS 4059	> 12A

The graphs show the countours of the particles > 20 µm



LAB REPORT



广州德优测检测技术有限公司

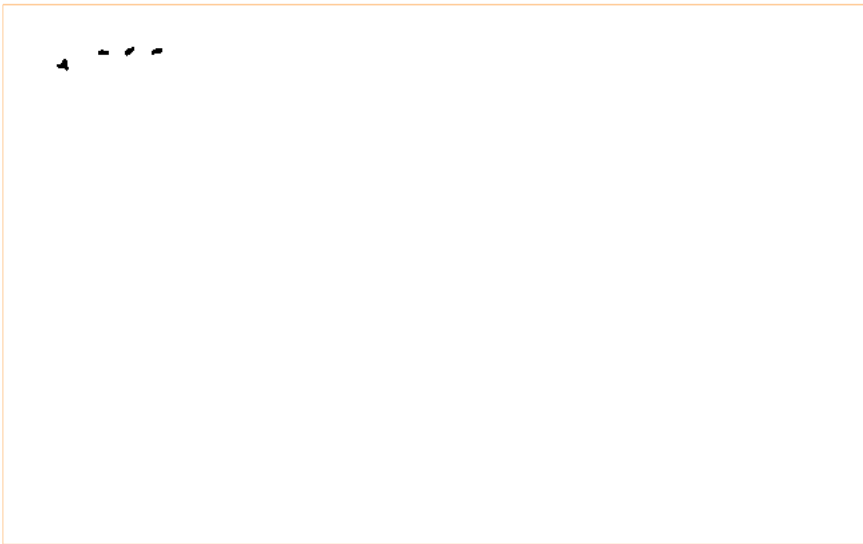
广州德优测检测技术有限公司
广州市番禺区番禺大道555号
天安节能科技园总部中心1号楼302室
邮编: 511400
总机: +86(20)3902-6228

OELCHECK CHINA LTD
Headquarter Building 1, Room 302
Panyu Avenue 555
511400, Panyu District of Guangzhou
P.R. China
Phone: +86(20)3902-6228
page 4 of 4

Unit ID **WIND ENERGY SYSTEM**
Component **Wind turbine - main gear**
Current sample number **1703568**

Manufacturer: **NGC**
Oil brand name: **Mobil Mobilgear SHC XMP 320**

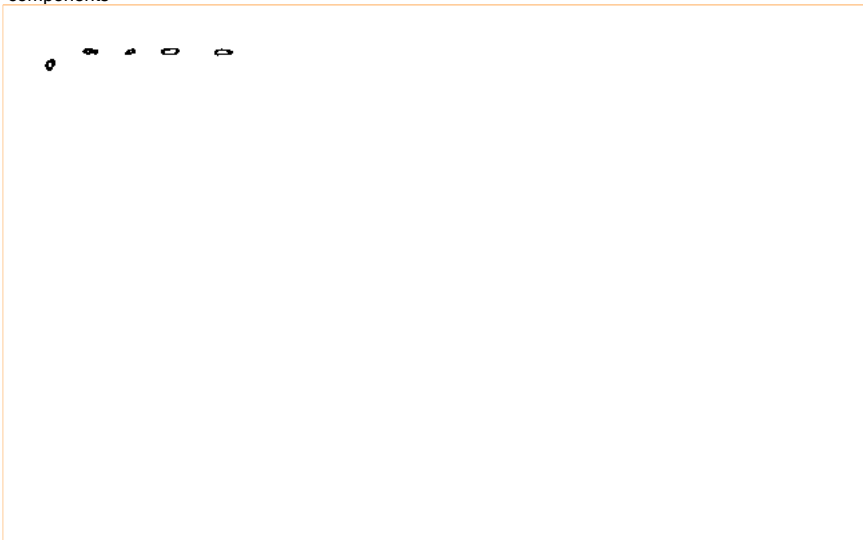
OELCHECK China Ltd.
Headquarter Building 1/302
Panyu Avenue 555,
511400 Panyu District GUANGZHOU Guangdong
P.R. CHINA



Fatigue wear

Caused by overload, vibration, long term use of components

1 scale line corresponds to 100 μm



Non metallic particles

Typical for additives, tribopolymers, soot, solid contaminants (dust)

1 scale line corresponds to 100 μm