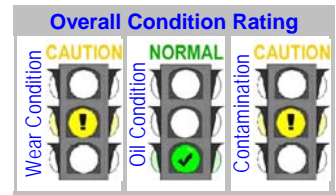


Customer Code : **8888**  
 Customer Name : **ABC Manufacturing Co.,Ltd**  
 Address : 123 Sukhumvit Road , Map Ta Phut Rayong 21150

Unit ID Number : **Duplex 2 Gear Reducer**

Unit Type : Gearbox  
 Unit Make : Flender  
 Unit Model : B 3 FH 13  
 Oil type / Viscosity : CALTEX MEROPA 320  
 Site Name :  
 Location :



Test code : 884  
 Lube System Capacity : 200 Liters

### Recommendations and Notes

Please note comments on the following Ferrogram / Filtergram page.  
 Suggest using an off-line filtration system to clean up the oil system.  
 All other wear tests and oil condition tests appear satisfactory, and the oil was still serviceable at the time of sampling.  
 Continue routine sampling interval.

WC / Andy Sitton

Condition History			Current Sample			Previous Sample			Alarm Limit Range														
			Wear	Oil	Cont.	Wear	Oil	Cont.	Wear	Oil	Cont.	Limit Name (Equipment / Oil) : Gearbox Extruder Meropa ISO 320											
<b>FocusLab ID</b>	Test Method	Result	⚠	⊘	⚠	⚠	⊘	⚠	⚠	⊘	⚠												
Date sampled	Hours on Oil	Hours on Unit	Bottle ID																				
				67777	14-Dec-06	170	28490	858971	66446	14-Nov-06	480	28320	858720	65784	31-Oct-06	400	27840	854321					
Wear Condition													New Oil	RDE fine		RFS coarse							
Wear Element	Method	Unit	RDE fine	RFS coarse	RDE fine	RFS coarse	RDE fine	RFS coarse	RDE fine	RFS coarse	RDE fine	RFS coarse	U-Caution	U-Action	U-Caution	U-Action							
Iron	D-6595	PPM	10.9	58.3 C	43.2 C	613.9 A	36.7 C	103.2 A	0	>35	>60	>40	>70										
Chromium	D-6595	PPM	0.4	0.0	0.7	5.5 A	0.7	1.2	0	>1	>2	>2	>4										
Lead	D-6595	PPM	1.1 C	0.4	1.1 C	0.8	1.0	0.5	0	>1	>3	>7	>12										
Copper	D-6595	PPM	0.1	0.4	0.3	2.9	0.3	0.8	0	>2	>3	>3	>4										
Tin	D-6595	PPM	1.1 C	0.0	0.0	1.2	0.0	2.5 C	0	>1	>2	>2	>4										
Aluminum	D-6595	PPM	0.3	0.0	0.2	1.8	0.1	1.9	0	>1	>2	>2	>4										
Nickel	D-6595	PPM	0.0	0.0	0.7	1.2	0.7	0.2	0	>1	>2	>2	>3										
Silver	D-6595	PPM	0.0	0.0	0.1	0.0	0.1	0.0	0														
Molybdenum	D-6595	PPM	0.4	0.0	1.1	0.0	0.6	0.0	0														
Titanium	D-6595	PPM	0.0	0.0	0.3	0.0	0.2	0.0	0														
Oil Condition													New Oil	L-Action	L-Caution	U-Caution	U-Action						
Viscosity @40°C	D-445	cSt	316.1		310.3		313.3		316.8	<285.1	<300.9	>332.6	>348.4										
Viscosity @100°C	D-445	cSt																					
Oxidation	FTIR	Abs	6.6 C		5.3		4.9		5.2		>6.5	>9.1											
Nitration	FTIR	Abs	5.3		4.6		4.3		4.5		>5.6	>7.8											
TAN	D-974	mg KOH/g	0.62		0.66		0.65		0.60		>0.8	>1.6											
TBN	D-4739	mg KOH/g																					
Contamination													New Oil	RDE fine		RFS coarse							
Water	T-H2O Check™	%(Wt.)	0.012		0.011		0.010		0.032		>0.05	>0.075											
Sodium	D-6595	PPM	0		1		1		0														
Silicon	D-6595	PPM	0.4		2.6		1.1		0	>5	>10	>5	>10										
Additive Element													New Oil										
Boron	D-6595	PPM	21		14		14		19														
Magnesium	D-6595	PPM	0		0		1		0														
Calcium	D-6595	PPM	21		19		20		19														
Barium	D-6595	PPM	0		0		0		0														
Phosphorus	D-6595	PPM	182		201		192		195														
Zinc	D-6595	PPM	0		1		3		1														
Additional Test													New Oil	L-Action	L-Caution	U-Caution	U-Action						
Flash Point	D-3828	°C																					
Viscosity Index	D-2270																						
Other																							

Note: Alarm Limits are variable and dependent upon dataset size and to be used as general guideline.  
 No Sign or ⊘ : NORMAL , C or ⚠ : CAUTION ( first level warning limit ) , A or ⚠ : ACTION required ( second level warning limit )  
 U-Caution : Upper CAUTION Level L-Caution : Lower CAUTION Level First level warning limit in Upper level and/or Lower level  
 U-Action : Upper ACTION required Level L-Action : Lower ACTION required Level Second level warning limit in Upper level and/or Lower level  
 Accuracy of interpretation and recommendation are based on representatives sample and information supplied. No warranty is expressed or implied for this report.

Customer Code : **8888**  
 Customer Name : **ABC Manufacturing Co.,Lt**  
 Address : 123 Sukhumvit Road , Map Ta Phut Rayong 21150

Unit ID Number : **Duplex 2 Gear Reducer**

Unit Type : Gearbox  
 Unit Make : Flender  
 Unit Model : B 3 FH 13

Oil type / Viscosity : CALTEX MEROPA 320

Site Name :  
 Location :

Test code : 884

Lube System Capacity : 200 Liters

Overall Condition Rating

Wear Condition	Oil Condition	Contamination
CAUTION	NORMAL	CAUTION

	Current Sample	Previous Sample		
<b>FocusLab ID</b>	67777	66446	65784	 <span style="background-color: green; color: white; padding: 2px;">Typical Normal Ferrogram</span>
<b>Date sampled</b>	14-Dec-06	14-Nov-06	31-Oct-06	
<b>Hours on Oil</b>	170	480	400	
<b>Hours on Unit</b>	28490	28320	27840	
<b>Bottle ID</b>	858971	858720	854321	
<b>Volume of Sample Used</b>	3 ml	3 ml	3 ml	
<b>Image of Wear &amp; Contaminants</b> Magnification 40X				
<b>Image of Wear &amp; Contaminants</b> Magnification 100X				
<b>Image of Wear &amp; Contaminants</b> Magnification 400X				

Wear & Contaminants Particles	%Rating	Size (Micron)	Particle Type	%Rating	Size (Micron)	Particle Type	%Rating	Size (Micron)	Particle Type	%Rating	Size (Micron)	Particle Type
Normal Rubbing Wear	3	2-3	F	5	3-5	F	2	10-20	F			
Fatigue Wear	4	20-50	F	4	10-50	F	7	20-80	F			
Fatigue Sphere												
Sliding Wear												
Cutting Wear												
Black Oxides	2	20-100	F				1	20-30	F			
Red Oxides												
Corrosive Wear												
Dirt and Dust												
Copper	1	20-50	N	1	120	N						

### Recommendations and Notes

Black oxides in ferrogram can indicate insufficient lubrication. Possible reasons/sources; improper oil type, improper grade of oil, poor lubricant film strength, poor lubricant circulation, blocked oil passages, equipment overloading or overheating.  
 Copper (bronze or brass) fatigue particles are present.

%Rating : Percent area covered by wear debris particles or contaminant particles  
 Size : Size in micron (0.001 mm) unit of wear debris particles or contaminant particles  
**F**: Ferrous Wear Particle, **N**: Non-ferrous Wear Particle, **C**: Contaminant Particle

Customer Code : **88888**

Unit ID Number : **Duplex 2 Gear Reducer**

Customer Name : **ABC Manufacturing Co.,Ltd**

Unit Type : Gearbox

Address : 123 Sukhumvit Road , Map Ta Phut  
Rayong 21150

Unit Make : Flender

Unit Model : B3 FH 13

Oil type / Viscosity : CALTEX MEROPA 320

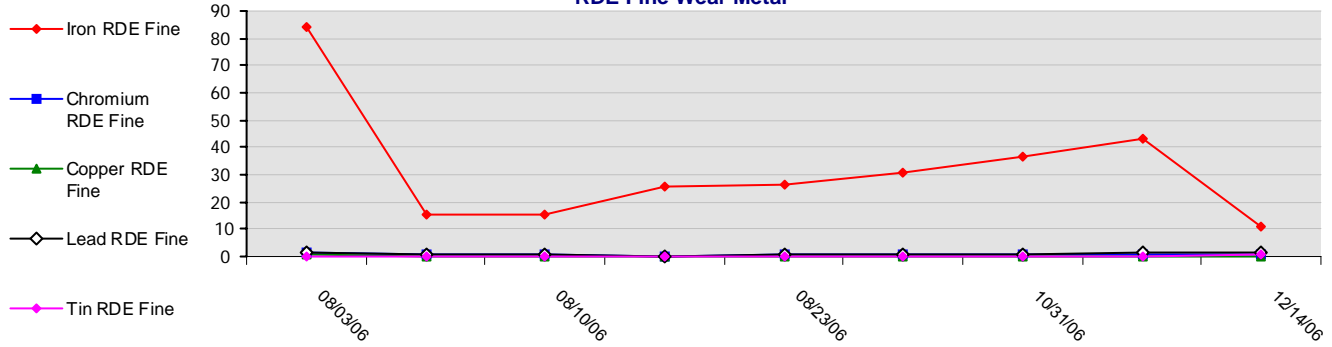
Site Name :

Location :

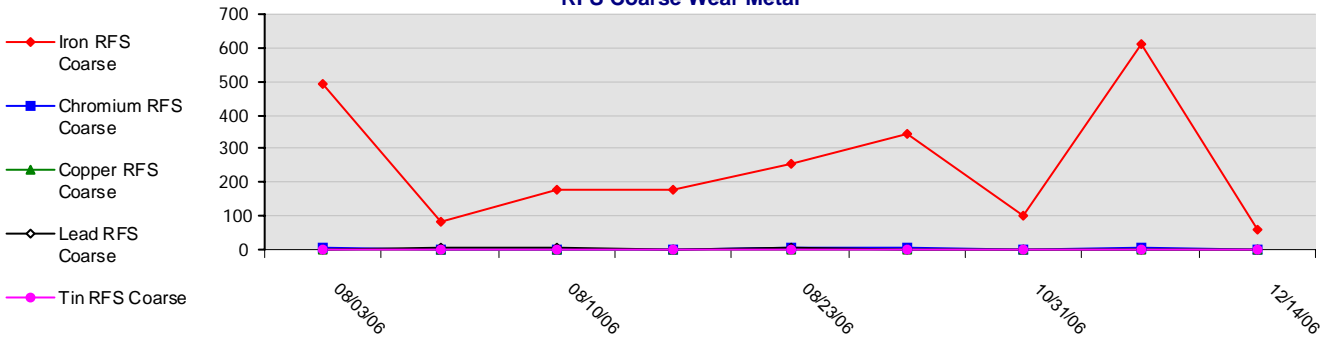
Lube System Capacity : 200 Liters

### Wear Condition

#### RDE Fine Wear Metal

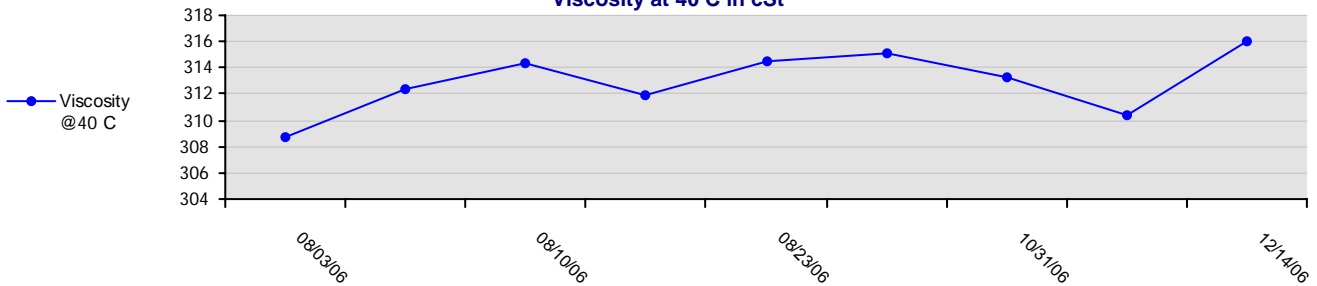


#### RFS Coarse Wear Metal

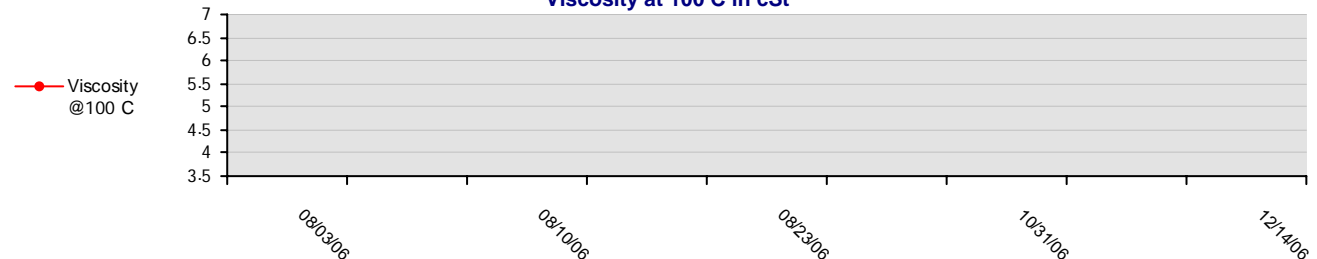


### Oil Condition

#### Viscosity at 40 C in cSt



#### Viscosity at 100 C in cSt



Customer Code : **8888**

Unit ID Number : **Duplex 2 Gear Reducer**

Customer Name : **ABC Manufacturing Co.,Ltd**

Unit Type : Gearbox

Address : 123 Sukhumvit Road , Map Ta Phut  
Rayong 21150

Unit Make : Flender

Unit Model : B 3 FH 13

Oil type / Viscosity : CALTEX MEROPA 320

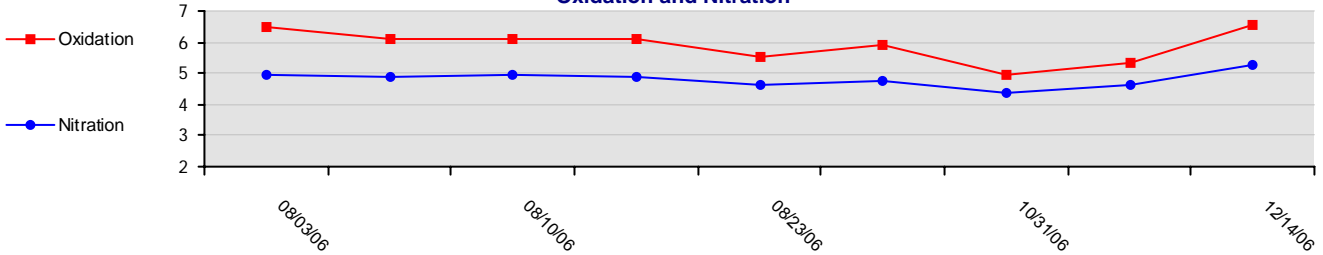
Site Name :

Lube System Capacity : 200 Liters

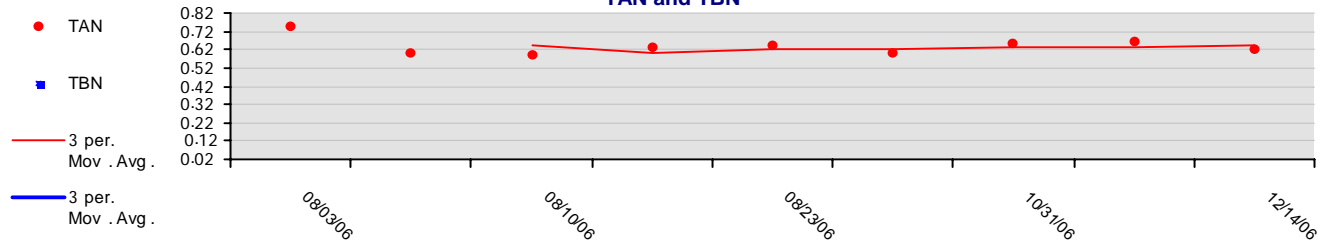
Location :

### Oil Condition

#### Oxidation and Nitration

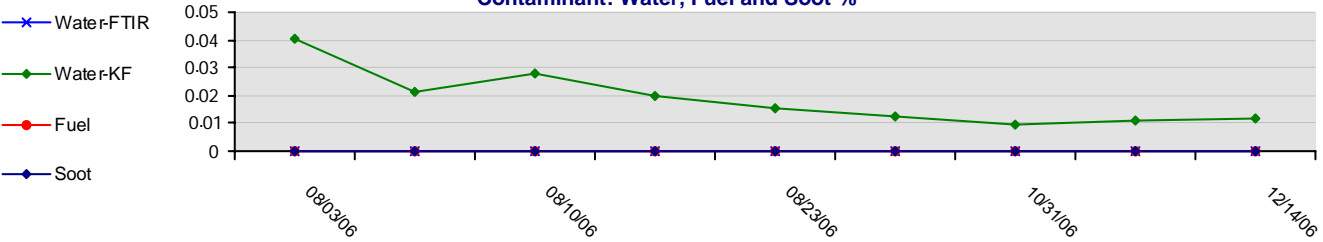


#### TAN and TBN

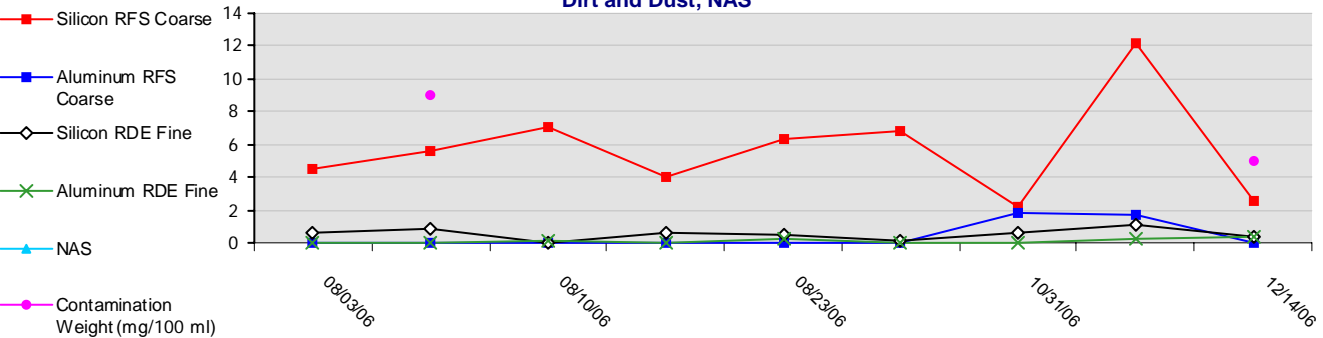


### Contamination

#### Contaminant: Water, Fuel and Soot %



#### Dirt and Dust, NAS



### Others

#### VPI and AO Additives

