

# LAB REPORT

Unit ID **Transformer**  
 Component **Insulating oil**  
 Current sample number **1704436**



OELCHECK GmbH · Kerschelweg 28 · 83098 Brannenburg

Machine type: **DOTR 63000/110**  
 Manufacturer: **SGB**  
 Oil quantity in system: **15800 l**

Example report  
 Analysis scope: Analysis-Kit ISO 4

### Diagnosis for the current laboratory values

There is no significant change in comparison to the previous sample. No wear metals present in the sample. The breakdown voltage is in the normal range. The dissipation factor and the interfacial tension show no unusual amount of polar components, which could be an advise for oil aging or impurities. Please observe further changes with the next sample. I recommend that you send the next sample at the next service interval or at your regular inspection for trend analysis.

Dipl.-Ing. Andy Böhme (CLS)

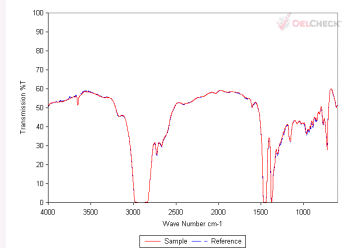
### Sample Rating



**normal**

ANALYSIS RESULTS			Current sample	Previous samples	
<b>LAB NUMBER</b>			<b>1704436</b>	1704437	
<b>SAMPLE RATING</b>					
Date tested			<b>28.08.2018</b>	24.08.2017	
Date of sample taken			<b>17.08.2018</b>	11.08.2017	
Date of last oil change			-	-	
Top-up since change			-	-	
Operating time since change			-	-	
Total operating time			<b>44</b>	32	
Oil changed			-	-	
<b>WEAR</b>					
Iron	Fe	mg/kg	<b>0</b>	0	
Chrome	Cr	mg/kg	<b>0</b>	0	
Tin	Sn	mg/kg	<b>0</b>	0	
Aluminum	Al	mg/kg	<b>0</b>	0	
Nickel	Ni	mg/kg	<b>0</b>	0	
Copper	Cu	mg/kg	<b>0</b>	0	
Lead	Pb	mg/kg	<b>0</b>	0	
Molybdenum	Mo	mg/kg	<b>0</b>	0	
Antimony	Sb	mg/kg	<b>1</b>	-	
Manganese	Mn	mg/kg	<b>0</b>	0	
<b>CONTAMINATION</b>					
Silicon	Si	mg/kg	<b>0</b>	0	
Potassium	K	mg/kg	<b>0</b>	0	
Sodium	Na	mg/kg	<b>1</b>	1	
Water K. F.	ppm		<b>9</b>	6	
<b>OIL CONDITION</b>					
Viscosity at 40°C	mm²/s		<b>8.52</b>	8.67	
Oxidation	A/cm		<b>1</b>	1	
Color	Color index		<b>0.5</b>	0.5	
<b>ADDITIVES</b>					
Calcium	Ca	mg/kg	<b>0</b>	0	
Magnesium	Mg	mg/kg	<b>0</b>	0	
Boron	B	mg/kg	<b>0</b>	0	
Zinc	Zn	mg/kg	<b>0</b>	0	
Phosphorus	P	mg/kg	<b>0</b>	0	
Barium	Ba	mg/kg	<b>0</b>	0	
Sulphur	S	mg/kg	<b>89</b>	34	
<b>ADDITIONAL TESTS</b>					
AN / NN	mgKOH/g		<b>&lt; 0.01</b>	0.02	
Density 15°C	kg/m³		<b>867</b>	867	
Breakdown voltage	kV		<b>72.80</b>	72.30	
Test frequency	Hz		<b>60</b>	60	
Dielectric dissipation factor	tan δ	-	<b>0.0023</b>	0.0010	
Resistivity	ρ+	GΩm	<b>330.85</b>	1840.00	
Relative permittivity	ε	-	<b>2.09</b>	2.10	
Interface tension	mN/m		<b>42.96</b>	43.86	

### Infrared Spectrum



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## Dissolved gas analysis (DGA)

The gas concentrations measured by the Dissolved Gas Analysis are unremarkable. Therefore a failure in the system is not obvious.

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## Sample Rating



**normal**

ANALYSIS RESULTS			Current sample	Previous samples	
<b>LAB NUMBER</b>			<b>1704436</b>	1704437	
<b>SAMPLE RATING</b>			✓	✓	
Date tested			<b>28.08.2018</b>	24.08.2017	
Date of sample taken			<b>17.08.2018</b>	11.08.2017	
Date of last oil change			-	-	
Top-up since change			-	-	
Operating time since change			-	-	
Total operating time M			<b>44</b>	32	
Oil changed			-	-	
<b>DISSOLVED GAS ANALYSIS</b>					
Nitrogen	N2	ppm	<b>49090</b>	31273	
Oxygen	O2	ppm	<b>21840</b>	11379	
Hydrogen	H2	ppm	<b>0</b>	1	
Carbon monoxide	CO	ppm	<b>294</b>	122	
Carbon dioxide	CO2	ppm	<b>2330</b>	1057	
Methane	CH4	ppm	<b>0</b>	10	
Ethane	C2H6	ppm	<b>0</b>	1	
Ethylene	C2H4	ppm	<b>0</b>	1	
Acetylene	C2H2	ppm	<b>0</b>	0	
Total gas		ppm	<b>73554</b>	43844	
<b>DGA INTERPRETATION</b>					
C2H2/C2H4			<b>n/a</b>	n/a	
CH4/H2			<b>n/a</b>	10.00	
C2H4/C2H6			<b>n/a</b>	1.00	
<b>DUVAL GAS CONCENTRATION</b>					
Amount for Duval triangle CH4			-	90.9	
Amount for Duval triangle C2H4			-	9.1	
Amount for Duval triangle C2H2			-	0.0	
Duval error type			-	T1	

## Sampling syringe

