LUBRICATION ENGINEERS, Inc.

LEADERS IN LUBRICANTS

July 30, 2018

TD 18030-01

Mr. David Macdonald
Lubrication Engineers International AG LTD
Seefeldstrasse 45
CH-8034
Zurich, Switzerland

Dear David,

Laboratory analysis has been completed on the used sample of Lubrication Engineers 6802 MULTILEC® Industrial Oil, submitted on behalf of Lubrication Engineers Yiikei Taiwan and their customer Triplex Chemical Co. It is reported that the sample of LE 6802 was taken from the C-901 Ingersoll Rand compressor. It was reported that this oil has been run for 9001 hours. The purpose of our testing was to determine the overall condition of the used sample of LE 6802. Typical values for new LE 6802 have been added to the laboratory analysis for comparison purposes only. Our results are attached for your review.

RESULTS

The used sample of LE 6802 delivered for analysis has a viscosity of 50.1 cSt at 40°C. This is considered on the upper end of an ISO 46 oil. The acid number does appear to be slightly elevated but is not yet at an alarming level. Particle count appears acceptable and water content remains low. Elemental analysis reveals barium, magnesium and zinc content from an unknown source, and calcium levels appear to be near depletion; however, testing did not reveal an abnormal level of wear.

Due to the low levels of calcium (used as a dispersant and anti-oxidant), the rise in viscosity, and a rising acid number, we recommend that the oil in this compressor be changed and replaced with a new fill of LE 6802. Routine monitoring through a reliable oil analysis program is recommended. This can be done by using Lubrication Engineers XAMINE™ program, via an advanced industrial test kit.

We hope this information is useful to you in working with Lubrication Engineers Yiikei Taiwan and their customer Triplex Chemical Co. If you have any questions or need further assistance, please do not hesitate to let us know.

Sincerely,

Patrick Loe, CLS
Technical Services Engineer
/bf

cc: Pat Kraus
Jeffrey Turner
Scott Leipprandt
Danny Roberts

LABORATORY ANALYSIS RESULTS

LOCATION: Triplex Chemical Co
UNIT ID: C-901
OIL TYPE: LE 6802
SAMPLE ID: TD 18030-01
UNIT TYPE, MFG, MODEL: Air Compressor, Ingersoll Rand, SSR-HP150
RESERVOIR CAPACITY: 151.2 Liters

DATE			-	**July 2018**
LAB NUMBER			-	**TD 18030-01**
	TEST	**UNITS**	**TYPICAL NEW LE 6802**	**USED**
LUBRICANT PROPERTIES				
	Viscosity @ 40ºC - ASTM D445	cSt	46	50.1
	Acid Number - ASTM D664	mg KOH/g	0.01	0.18
CONTAMINATION				
	ISO 4406:99 Particle Cleanliness Code	No Unit	-	20/18/14
	Water - Karl Fischer	ppm	<1000	37
ELEMENTAL ANALYSIS - ASTM D5185				
Wear Metals	Aluminum/Al	ppm	0	0
	Antimony/Sb	ppm	0	0
	Cadmium/Cd	ppm	0	0
	Chromium/Cr	ppm	0	0
	Copper/Cu	ppm	0	4
	Iron/Fe	ppm	0	2
	Lead/Pb	ppm	0	0
	Manganese/Mn	ppm	0	0
	Nickel/Ni	ppm	0	0
	Silver/Ag	ppm	0	0
	Tin/Sn	ppm	0	0
	Titanium/Ti	ppm	0	0
	Vanadium/V	ppm	0	0
Additives	Barium/Ba	ppm	0	5
	Calcium/Ca	ppm	120	3
	Magnesium/Mg	ppm	0	2
	Molybdenum/Mo	ppm	0	0
	Phosphorus/P	ppm	300	248
	Zinc/Zn	ppm	0	33
Contam.	Boron/B	ppm	0	0
	Potassium/K	ppm	0	0
	Silicon/Si	ppm	0	0
	Sodium/Na	ppm	0	0