

Hydro One Case Study

hydro 
one

Hydro One Case Study

- Kleenoil units were first installed at Hydro One in 2004.
- The fact that the Kleenoil filter cartridge removes 99.95% of all water made it very appealing to Hydro One.
- After verifying that the Kleenoil filter removed water it was decided that the filter should be installed on all the trucks for safety purposes.
- These trucks have dielectric tests done on a semi-annual basis. If there is water in the oil they have the potential to transfer electricity from the power lines to the truck in the event of a blown hose. Should the truck fail this test it is taken out of service and the oil is changed and system is flushed. This is very time consuming and expensive.



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- As time went on and through oil sampling, it was determined that the hydraulic oil did not need to be replaced as often as it was in the past.
- Currently the oil is only changed when the oil samples indicate that there is something wrong. This is virtually non-existent now.
- In a recent meeting between management and the oil analysis company it was stated by the oil analysis company that Hydro One had cleaner hydraulic oil than anyone else that they dealt with.
- To date the filters are installed on all hydraulic and hydrostatic units. There are approximately 1500-1800 units installed to date.

Hydro One Case Study

- Hydro One has also virtually eliminated holding valve repairs and replacements. The same can be said for the hydraulic pumps. Before Kleenoil, the technicians were constantly replacing holding valves and pumps which was very expensive and time consuming.
- Filter cartridges are changed every 300hrs or when the 6 month inspection is completed. Oil samples are also done at this time.
- Installations are done at the yards of Altec, Wajax and Posi Plus. Posi Plus has been set up as a dealer and currently sells and installs the Kleenoil product. Both Altec and Wajax invoice Hydro for the filter units.

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- If the relief valve setting is below 3000psi then a pressure reducing/relief valve (hydraulic block) is used and the flow is obtained from the pressure side. On some Posi units the flow can be obtained from the return oil circuit going back to tank. This eliminates the use of the pressure reducing valve.
- On some Altec units a 10-12 psi crack valve was installed after the return filter in order to generate back pressure. The Kleenoil system was then T-ed in before the return filter and the oil from the Kleenoil was returned back to the tank.

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- Oil inlet on an early Altec installation.



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- Return point on all installations



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- Filter installed with both the inlet and return lines



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- Typical Altec aerial device on a Hydro One truck



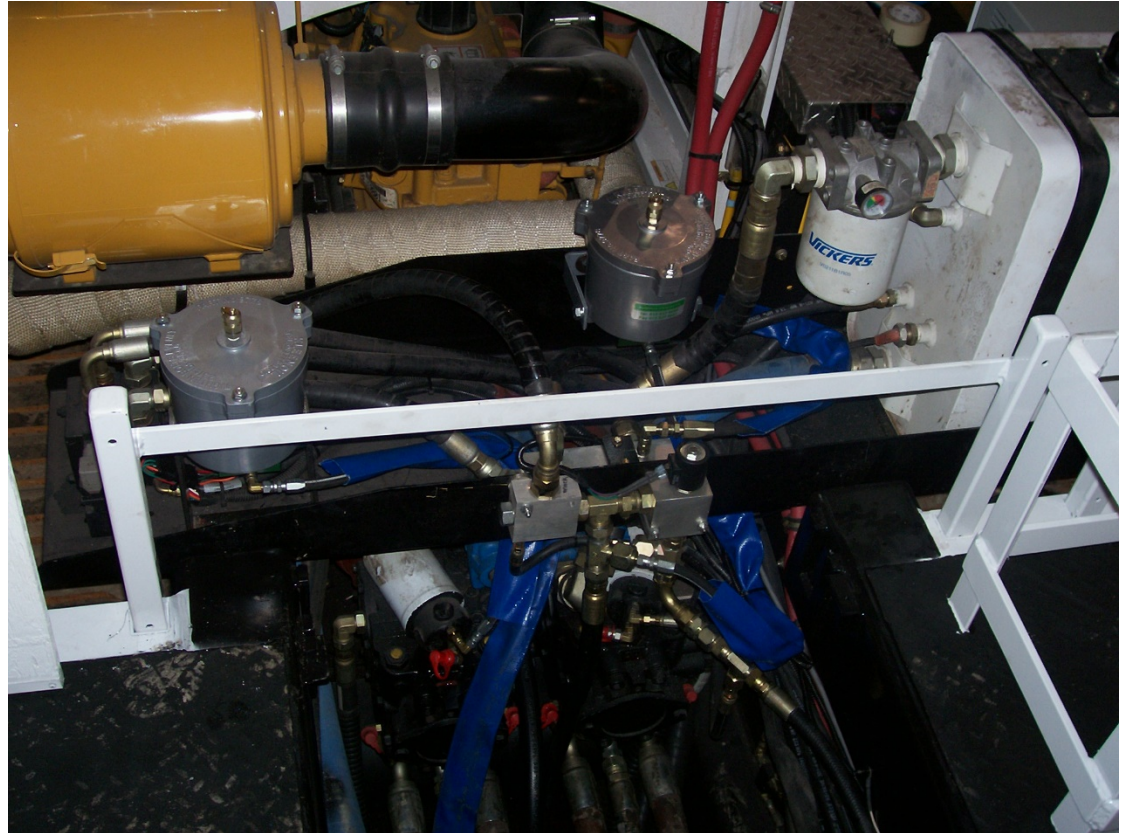
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- Altec GT3000 track machine that has both the hydraulics and hydrostatic's done



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- This photo shows the installation. On these machines the hydraulic pick up is right at the pump and the return is to the top of the tank. The hydrostatics is picked up via charge pressure and returned back to top of tank.



Hydro One – Hydraulic Drive

Customer Information

HYDRO ONE (FLEET SERVICES)
 6975 Kenderry Gate
 Mississauga, ONTARIO
 L5T 2Y1
 Attention: RAY MURRE
 Phone: (905) 327-9081

Unit Information

Unit #: 810929
 Component: HYDRAULIC DRIVE
 Location:
 Manufacturer:
 Serial #: 810929
 Model:

Lubricant

Manufacturer:
 Brand:
 Grade:
 Sample: 10/27-259

FLUID LIFE
 EQUIPMENT RELIABILITY SERVICES

Oil Analysis

95 Copernicus Boulevard, Brantford
 Ontario, Canada N3P 1N4
 Phone: 877 962 2400

Sample		Contaminants ppm			Wear Metals ppm										Additives ppm									
Sample Number	Sample Date	Sodium	Potassium	Silicon	Aluminum	Iron	Copper	Lead	Tin	Chromium	Nickel	Titanium	Sliver	Vanadium	Antimony	Beryllium	Calcium	Zinc	Phosphorus	Magnesium	Molybdenum	Boron	Barium	Lithium
10/27-259	2015/10/16	0	0	8	0	4	4	1	0	0	0	0	0	0	1	0	2004	1075	1057	612	34	13	0	0

Sample Information

Sample Date	Oil Mfr.	Oil Brand	Oil Grade	Comp. Service	Oil Service	Units	Oil Chg
2015/10/16				1527		HR	N

Physical Tests

Visc 40°C cSt	Visc 100°C cSt	Visc Index	Water
86.3	12.35	139	N

Additional Tests

TAN (mgKOH/g)	ISO Method	ISO Code	ISO 4u Count	ISO 6u Count	ISO 14u Count
2.10	ISO	18/16/12	1725	322	34

Results

2015/10/16 Assuming normal oil service life, tested wear and contamination are within acceptable limits.

Recommendations

2015/10/16 Resample next interval to monitor.
 Notes: ARI 6010216554289808, NO KM, NO PTO HRS

Key: Y - Yes N - Negative P - Positive R - Reportable U - Unacceptable S - Severe I - Insufficient Sample > - More Than < - Less Than

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 Phone: (905) 327-9081

Unit Information

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 Component: HYDRAULIC DRIVE
 Location:
 Manufacturer:
 Serial #: 810929
 Model:

Lubricant

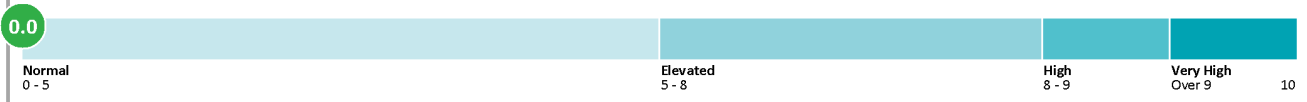
Manufacturer:
 Brand:
 Grade:
 Sample: 10/27-259



Trend Analysis

95 Copernicus Boulevard, Brantford
 Ontario, Canada N3P 1N4
 Phone: 877-962-2400

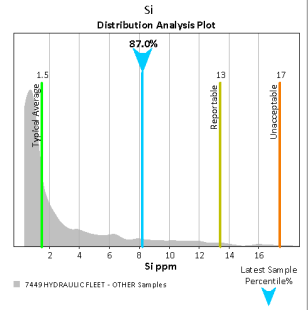
Your Sample Rank



Sample rank ranges from zero to ten. The higher the sample rank, the more abnormal the sample results are.

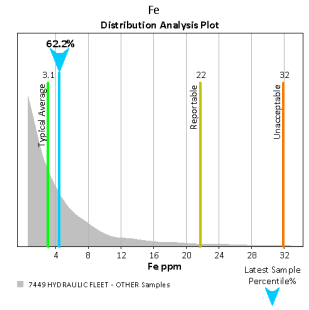
Top Trends Analysis

Si Test Rank 4.6



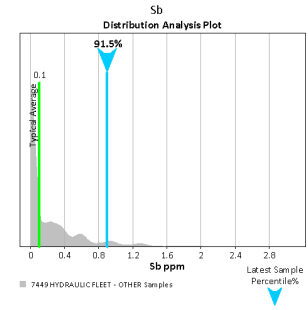
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Fe Test Rank 1.6



No trend analysis available.

Sb Test Rank 0.9



No trend analysis available.

TAN Test Rank 0.8

TAN

No distribution analysis available.

No trend analysis available.

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Hydro One – Hydraulic Boom

Customer Information

HYDRO ONE (FLEET SERVICES)
 6975 Kenderry Gate
 Mississauga, ONTARIO
 L5T 2Y1
 Attention: RAY MURRE
 Phone: (905) 327-9081

Unit Information

Unit #: 907058
 Component: HYDRAULIC BOOM
 Location:
 Manufacturer:
 Serial #:
 Model:
 Site Location: BT1

Lubricant

Manufacturer: ESSO
 Brand: UNIVIS
 Grade: EXTRA
 Sample: 10/27-271



Trend Analysis

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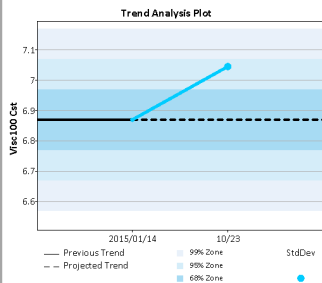
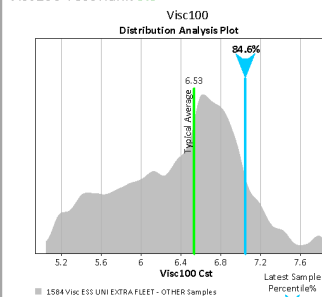
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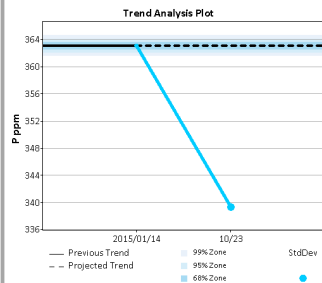
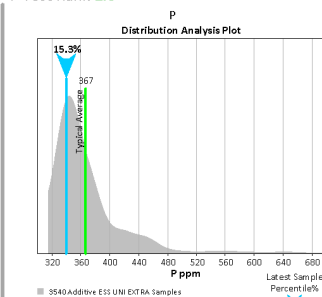
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Top Trends Analysis

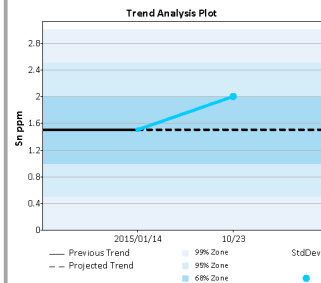
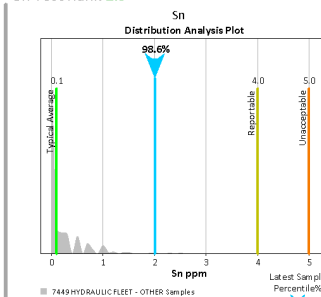
Visc100 Test Rank 3.9



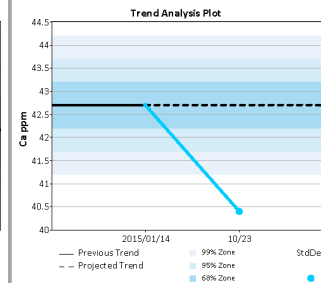
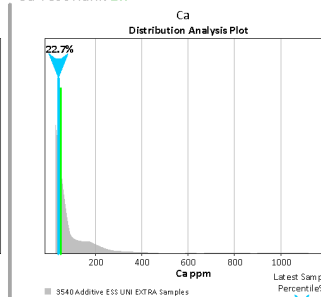
P Test Rank 2.8



Sn Test Rank 2.5



Ca Test Rank 1.7



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6975 Kenderry Gate
Mississauga, ONTARIO
L5T 2Y1
Attention: RAY MURRE
Phone: (905) 327-9081

Unit Information

Unit #: 939755
Component: HYDRAULIC BOOM
Location:
Manufacturer:
Serial #:
Model:
Site Location: BT1

Lubricant

Manufacturer: ESSO
Brand: UNIVIS
Grade: EXTRA
Sample: 10/27-268



Oil Analysis

95 Copernicus Boulevard, Brantford
Ontario, Canada N3P 1M4
Phone: 877 962 2400

Sample		Contaminants ppm			Wear Metals ppm										Additives ppm									
Sample Number	Sample Date	Sodium	Potassium	Silicon	Aluminum	Iron	Copper	Lead	Tin	Chromium	Nickel	Titanium	Silver	Vanadium	Manganese	Benilium	Calcium	Zinc	Phosphorus	Magnesium	Molybdenum	Boron	Barium	Lithium
Ref. Sample	2009/02/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	341	421	1	0	0	0	0
10/27-268	2015/10/23	0	0	1	0	2	7	1	1	0	0	0	0	0	0	0	57	458	366	1	0	0	0	0
04/13-023	2015/02/23	0	1	1	0	2	6	2	1	0	0	0	0	0	0	0	59	470	376	0	0	0	0	0

Sample Information								Physical Tests			Additional Tests						
Sample Date	Oil Mfr.	Oil Brand	Oil Grade	Comp. Service	Oil Service	Units	Oil Chg	Visc 40°C cSt	Visc 100°C cSt	Visc Index	Water	TAN (mgKOH/g)	ISO Method	ISO Code	ISO 4u Count	ISO 6u Count	ISO 14u Count
Ref. Sample	ESS	UNI	EXTRA					32.8	7.60	212	N						
2015/10/23	ESS	UNI	EXTRA	81212		KM	N	26.5R	6.01R	184	N	0.58	ISO	18/15/11	1313	219	13
2015/02/23	ESS	UNI	EXTRA	3817	1177	HR	N	25.4R	5.80R	183	N	0.74	ISO	18/16/13	1329	369	54

Results

2015/10/23 Viscosity at 40°C and Viscosity at 100°C flagged for your attention.
2015/02/23 Viscosity at 40°C and Viscosity at 100°C flagged for your attention.

Recommendations

2015/10/23 Check causes of oil breakdown - overheating, poor cooling, wrong lube, excessive service or contaminated sample.
Resample mid - interval to monitor.
Notes: ARI 6010216586201995, 4198 HRS, 1304 PTO HRS

2015/02/23 Check causes of oil breakdown - overheating, poor cooling, wrong lube, excessive service or contaminated sample.
Resample mid - interval to monitor.
Notes: ARI 6010216586201995, 73841 KMS

Key: Y - Yes N - Negative P - Positive R - Reportable U - Unacceptable S - Severe I - Insufficient Sample > - More Than < - Less Than

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 Model:
 Site Location: BT1

Lubricant

Manufacturer: ESSO
 Brand: UNIVIS
 Grade: EXTRA
 Sample: 10/27-268



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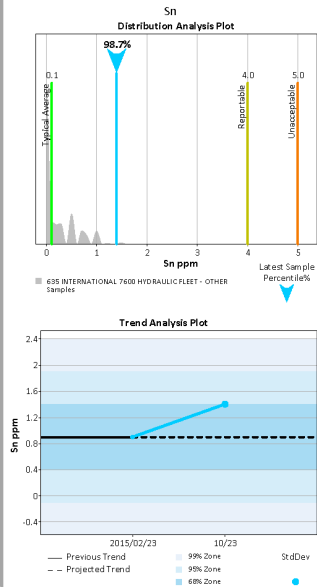
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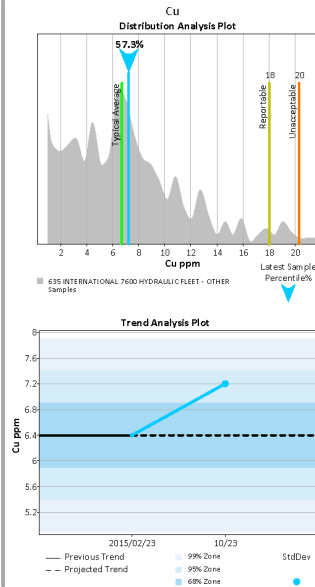
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Top Trends Analysis

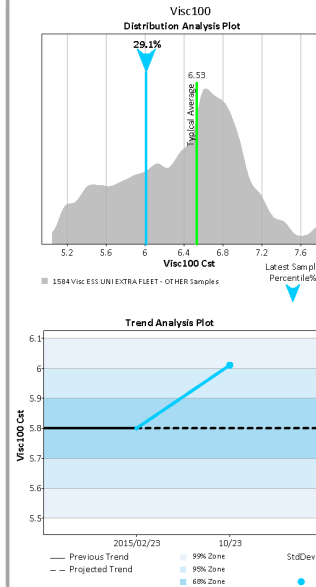
Sn Test Rank 1.8



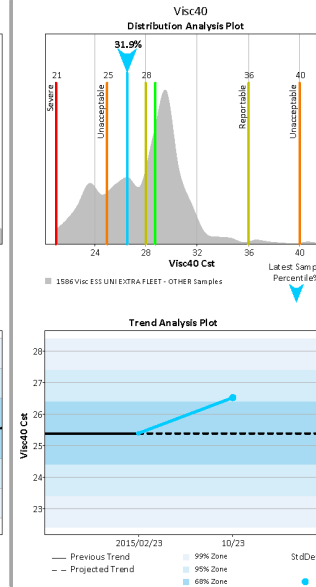
Cu Test Rank 1.4



Visc100 Test Rank 1.3



Visc40 Test Rank 1.0



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KLEENOIL

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*“Make **Green** the new color of your bottom line!”*

KLEENOIL 