



EPRI (Electric Power Research Institute) EHC Lube Notes

From their website: The Electric Power Research Institute (EPRI) conducts research, development, and demonstration projects for the benefit of the public in the United States and internationally.

While many of their reports are only available to members and/or contributing utilities, many older reports and the Lube Notes are publicly available for downloading. See www.epri.com.

The following are Lube Notes items that could be of interest to users of phosphate ester based EHC fluids. They have the most recent first and several are authored by K.J. Brown of Utility Service Associates.

Membrane Patch Colorimetry Testing in Electrohydraulic Control Systems, Lube Notes #2, Lube Notes Dec 2020. Summary: The MPC test should be part of the routine condition monitoring of phosphate ester stream turbine control fluids. If the fluid is known to be in good condition and the servo valve known to be clean, the MPC test should be run at least every two years. Phosphate ester EHC fluids are capable of trouble-free operation lasting for decades if all of the right fluid tests are performed at the right intervals and the fluid maintenance is done correctly.

Tips for Successful Inline Oil Analysis Sensor Installation, Lube Notes #6, December 2020. Summary: Proper installation, hydraulic material selection, and the resolution of legacy system/oil issues are vital to sensor operation and accuracy. Having the ability to evaluate the accurate sensor data completes the project.

Phosphate Ester EHC Elastomer Compatibility, Lube Notes #2, December 2018. *Summary: It should be well known what elastomers are okay. But the use of unsuitable materials for seals, bladders and hoses continues. This has a table and examples. In general, do NOT use Buna N and DO use Viton or similar materials.*

Avoiding EHC Fluid Problems, Lube Notes #5, December 2018. *Summary: Many fluid related issues are because something that should have been done, was not or was not done correctly. This discusses too common issues and the lessons learnt.*

Electrohydraulic Control Fluid is Out of Specification, Lube Notes #3, December 2017. *Summary: Discusses some of the common tests, the meaning and what actions to consider. Take action before limits are reached.*

Filter Cart Uses and Selection, Lube Notes #5, December 2017. *Summary: New lube oil and EHC fluids are generally too dirty to add directly to equipment. This can be because of manufacture, shipping and/or storage. This discusses what features can be specified and some of the different choices.*



Filter Element Selection, Lube Notes #6, December 2017. *Summary: There is more to a filter element than the micron rating. This discusses significant features and the tests as well as useful condition monitoring and actions to optimise their application.*

Reducing Water Content with Dry Air Purge Systems, Lube Notes #2, December 2016. *Summary: This shows some of the benefits of lower water contents and the ability to get down to a few hundred ppm easily.*

Electrohydraulic Control Fluid Testing and Interpretation, Lube Notes #4, December 2016. *Summary: Discusses the different tests, what they mean and some actions.*

Electrohydraulic Control Servo Valve Maintenance, Lube Notes #5, December 2016. *Summary: Discusses new vs. rebuilt and the importance of getting feedback in any case about the condition of the screen and of the internals.*

New GE Specification for EHC Fluid, Lube Notes #2, December 2014. *Summary: This lists the changes in the specification for new and in-service fluid and the changes to recommended condition monitoring. There are many more tests.*

High Particle Counts in EHC Fluid, Lube Notes #4, December 2014. *Summary: Some of the causes and actions in case of high particles counts. Do not ignore in case it is wear such as the main pumps or passing filter elements. Have a verified sampling procedure.*

Related

Investigating the Use of Online Oil Sensors-Part 2: Sensor Selection for Pilot Study, Lube Notes #4, December 2019. *Summary: This covers the process used at Peach Bottom to select the sensors for their steam turbine lube. The end result of this would be to support the goal of continuous early warning detection of anomalies and correlation of these data with conventional laboratory tests to further the application of the technology.*

Electrostatic Discharge Causing Oxidation in Turbine Oils, Lube Notes #1, October 2009. *Summary: Sparking in filter elements can sometimes be heard as a crackling. This can mean electrical arcs and very high local temperatures. The result can be fluid degradation, formation of coke particles, plugging of filters and filter damage.*

Effect of Water in Oil on Bearing Life, Lube Notes #4, October 2009. *Summary: As little as 100-200 ppm water is estimated to reduce bearing life by 25-60%.*

Turbine Oil Contaminated with Electrohydraulic Control Fluid, Lube Notes #3, October 2009. *Summary: Mineral oil can get into the EHC fluid as a result of wrong make-up but also from dripping leaks and passing seals. This can be seen as an increase in the phosphorous content. This can affect the performance of the steam turbine oil. It is suggested that precautions be taken when the P level nears 4000 ppm.*

To Change or Not to Change (An Oil)?, NMAC Lube Notes #6, November 2000. *Summary: This was an attempt to include all the various costs associated with an oil change. These can be 40X the cost of just the oil.*

Sep 2021