

Oil Analysis and **Lubricant Management Prove Successful**

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🆰 outhern Champion Tray Company is a manufacturer and printer of food containers. The firm was motivated to change its oil analysis and lubricant management programs after company personnel were introduced to Noria Corporation's Machinery Lubrication Technician (MLT) training. This case study chronicles how plant personnel made important changes after oil analysis reflected high contamination levels.

Solving the Problem

Southern Champion Tray made a proactive decision to implement a filtration process. Two targets were selected for improvement: the baler's hydraulic systems and the printing

press' circulating oil. The company installed desiccant breathers on all of its hydraulic systems, with quick-disconnects and sample ports, then added an off-line filtration cart (kidney system) with 12- and six-micron filtration. From a philosophical standpoint, the plant veered away from using time as an oil change interval. Instead, it utilized condition monitoring with the help of the Lubrication Engineers Analysis Program (LEAP).



Figure 2. Site Glass to Check for Water



Figure 3. Breather Keeps Contamination and Water Out of System

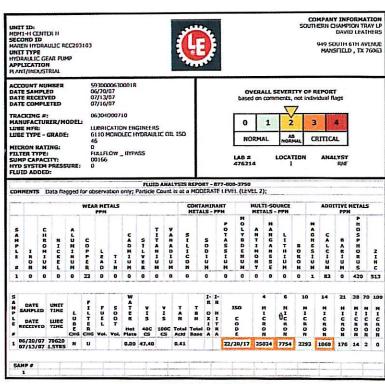


Figure 1. Fluid Analysis Report

Before, oil analysis showed that system lubricant (an ISO-46 product) was in good condition but highly contaminated. The filtration measures improved the lubricant from an ISO cleanliness level of 22/20/17 to 18/15/11; this is essentially 32 times cleaner oil. A higher level of cleanliness is expected when the site begins to implement six-micron to three-micron filters on the filter cart.

Results of the Case Study

One of the benefits of the work completed was that lubricant consumption was reduced by 75 percent. Southern Champion Tray's efforts completely solved the problem of having to use time-based drains on these units. Before, the plant was changing oil annually. Now, it changes oil every five years or longer. Time to failure is now more than five times longer before a failure is anticipated. And, disposal costs were cut by 75 percent.



Figure 4. Breather Keeps Paper **Dust Out of Gearbox**



Figure 5. Clean Oil Storage

To monitor the program's progress, the plant has used on-site visual inspections, infrared thermography and oil analysis.

The real costs of implementing the improvements included:

- Filtration costs, including off-line system, \$3,396
- Site glasses for units, \$302
- LEAP (oil analysis), \$295

The total cost to implement the changes were \$3,993. Add in labor costs of \$18 per hour for two hours and the grand total was \$4,029.

From a technical perspective, no special skills were involved in this project, other than sizing the filtration to the equipment.

Making it Happen

At first, the implementation team was resistant to change because team members didn't fully understand the benefits that would be realized at their level. Management wanted to know what kind of a return on investment was possible, and when those returns would be noticed. The work and data supplied by plant engineer David Leathers and the author helped push the programs through those potential roadblocks.

Return on investment (ROI) came at the first oil change not needed, or four months after implementation.

Contamination control served a significant role in achieving savings and benefits. It was of utmost importance in achieving the target of extended drain intervals without compromising equipment life. The contamination level before the improvements was 22/20/17. The current level is 18/15/11. Breathers were incorporated at the fill port.



Figure 6. Oil Storage Before Cleanup

The LEAP program (laboratory service) included particle count along with spectroanalysis. A full report showed particle count, viscosity, water and acid, along with all additive and wear metals. The program provided assistance through online and on-site programs in reading and understanding the oil analysis results.

Besides the work of David Leathers and suppliers, program success was the result of integrated lubrication and oil analysis with other maintenance technologies. As the units are checked and hours of operation recorded, personnel take oil samples and visually inspect the machines. Units are checked using thermographic techniques as added insurance that nothing is out of line.

Lessons Learned

Looking back, the plant admits it would have done a few things differently. It would have communicated to everyone in the plant what benefits would be achieved by implementing the different filtration units. It would have done a better job from the onset to make everyone as knowledgeable as those in the engineering department.

About the Companies

More information about Southern Champion Tray can be found at www.sctray.com. To learn more about Lubrication Engineers, visit www.le-inc.com.

Get Your Employees Trained

Machinery Lubrication I and II is a certification series that provides powerful training for maintenance and reliability professionals. Course information can be found at www.noria.com/training.

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The International Council for Machinery Lubrication (ICML) is a vendor-neutral, not-for-profit organization founded to facilitate growth and development of machine lubrication as a technical field of endeavor. Among its various activities, ICML offers skill certification testing for individuals in the fields of machine condition monitoring, lubrication and oil analysis.

ICML is an independently chartered organization consisting of both paid professional staff members and volunteer advisors. For more information: www.lubecouncil.org or info@lubecouncil.org.

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