

Issue Focus: Optimizing Oil Health with Reservoir Management

TIP #1

To minimize contamination of reservoirs, use external level gauges for checking reservoir oil levels rather than lifting access lids.



TIP #2

Install quick-connect couplings on reservoirs for periodic flushing and filtering.

TIP #3

Tightly seal clean-out covers and hatches. Top hatches should have elevated lips to help keep out contamination.

TIP #4

In hydraulic reservoirs, baffles are used to prevent fluid just returned to the tank from passing directly back to the pump inlet. For a number of reasons, a longer transit path is considered beneficial: it encourages better heat conduction from the fluid, better contamination and air separation, and better mixing with the bulk fluid. This is usually accomplished by separating the inlet and outlet by as long of a flow path as feasible.

TIP #5

Wipe down level gauges, sight glasses and BS&W bowls for easy inspection.

Lubrication Tip

It is very important to understand what type of bearing is installed within your electric motors. Some have totally sealed bearings and do not require any additional lubrication during its operating life. Others may have a bearing fitted with a shield on one side and a drain port available. These do require frequent lubrication during its operation. Larger motors may contain fully open bearings and require more frequent lubrication. Remember to always check with the motor manufacturer what bearing configuration is used and what is the recommended lubrication program. Over or under greasing of the motors because of the wrong selection of the lubrication strategy can reduce the motor's operating life significantly.

[Click here for more lubrication resources & links](#)

Power Quality Tip

Transients are very short duration disturbances, less than $\frac{1}{4}$ cycle of power frequency and more often, measured in microseconds. They used to be referred to as impulses, surges, spikes or glitches, but those terms can have ambiguous meanings, so the term "transient" was adopted by the IEEE and other standards groups. Broadly speaking, transients can be classified into two categories-impulsive and oscillatory.

Common causes of voltage transients are power factor capacitor banks being switched on or off, lightning striking a conductor or adjacent to a conductor, arcing from a phase conductor coming in contact with some sort of ground potential (such as a tree), and the notches resulting from the commutation period of the SCRs on rectified input three phase power supplies (such as in ASDs).

Possible effects of transients include data corruption on memory devices, equipment damage, data transmission errors, intermittent equipment operation, reduced equipment life, and irreproducible problems. Transients are often "sneaky," in that they happen very quickly and randomly, and many power quality monitors will not capture them, especially the high frequency transients.

CMMS Tip

Create Lay-up (LU) and Start-up (SU) maintenance tasks the same as Preventive Maintenance (PM) tasks in your CMMS program. Then schedule them when needed, generate a work order, and accomplish the task.

Lay-up maintenance (LU) tasks prepare equipment for periods of prolonged downtime and are performed at the beginning of the off-line period.

Start-up maintenance (SU) tasks ensure that equipment is in a condition suitable for operation or to reactivate an equipment or system that has been inactivated, in lay-up, for a prolonged period. Start-up maintenance consists of performing turn-on procedures and restoring the equipment to operational status.

If your CMMS program automatically schedules tasks after the work order is closed ensure you unreschedule the task(s) until needed again.

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Vibration Analysis Tip

Cook book recipe for analyzing vibration spectra

1. From records or direct measurement, establish rotational rpm of the driver: motor, turbine etc.
2. Find and mark the peak denoting the motor rotation and its harmonics.
3. Find and mark the rotational rate and the harmonics of other shafts rotating at other speeds (as in a gearbox or pulley and belt reducer)
4. If there is a gearbox, locate the shaft rpm peaks as above and the gearmesh frequencies and their harmonics.
5. Whatever else is left unmarked in a spectrum is probably a peak due to a bearing(s).

Investigate bearing fault frequencies paying special attention to the fact that fault frequencies need to be based on the shaft rpm the bearing is on. That is, a 6318 bearing's outer race fault frequency is 3.08X. However, if that bearing is on a shaft that is rotating at 70% of the motor rpm, one should look for that peak at $3.08 \times 0.7 = 2.156X$.

By following this recipe, you can safely expect that 70% of spectra that you encounter will be a piece of cake to analyze.

[Click here for more vibration analysis resources & links](#)

Best Practices - Maintenance Contracting

Please join us for a private 10 minute online survey to determine best practices formaintenancecontracting.

As a survey participant you get immediate feedback to compare your answers with almost 200 peers. You can also request the summary report and white paper when completed.

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Maintenance Management Tip

Change Management - many businesses are re-defining their approach to maintenance through the use of new techniques such as Reliability Centered Maintenance (RCM) and Condition Monitoring (oil analysis, vibration, etc). Through the use of a Communications Plan, management can help facilitate the program elements and benefits allowing connectivity between workforce members and business goals. The Communications Plan can consist of the following items.

1. Regular meetings/briefings
2. In-house newsletter articles
3. Postings on dedicated "Information Boards"
4. Intranet Site
5. Training modules
5. Use of multi-discipline Task Teams to design and implement new business practices

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ROOT Cause Analysis Tip

Develop a management system with your planners/schedulers, which will allow the fair weighting of Root Cause Analysis (RCA) recommendations against the reactive work typically backlogged in a plant work order system.

[Click here for more ROOT Cause Analysis resources & links](#)

TPM Tip

Critical Success Factors for TPM Teams:

- * Teams should stay within their area of expertise
- * Teams should operate within their realm of influence/control, not their realm of concern

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