Restarting Lubricated Equipment After Extended Shutdown

Careful planning before the shutdown and utilizing best practices during the shutdown will certainly reduce damage to the lubricants and to the critical plant equipment during extended shutdown, but when you are ready to return to normal production, your equipment and lubricants may still not be ready.

Below are practical recommendations for equipment and lubricant maintenance to facilitate a more successful restart and to put your manufacturing facility in a better position for successful return to normal production.

- Critical gearboxes and reservoirs should be sampled and tested to check physical properties of the oil, additive package and for presence of atmospheric contamination, wear materials, water and oxidation.
- Filter your oils to remove solid particles using permanent kidney loop filters or assist-filtration if oil sample results indicate the presence of atmospheric contamination and/or wear materials.
- What to do if oil sample report has indicated oil condition which cannot be resolved by filtration? The examples of such conditions may be the following: unacceptable viscosity change; significant TAN (total acid number) increase; additive degradation, etc. Change the lubricant. Contact Castrol Industrial Engineering and Technical Support for most effective changeover procedures.
- Use a filter cart if oil reservoir is not equipped with filtering circulation system and does not have kidney loop filtration. Filter carts usually have larger, more efficient filters with higher dirt holding capacity and will be more cost effective to remove solid contamination. Set filter cart up to pull oil from one side of the tank and return on the opposite side for maximum efficiency.
- Check all reservoirs for presence of the water by opening drain valves at the bottom of the reservoirs. During shutdown, water will separate from the oil and will be located at the bottom of the reservoir.
- Water can be removed by draining from the system using drain valves. Drain water until you see clean oil. Special attention needs to be taken in hydraulic and circulating systems where there may be low areas in the hoses and piping that could capture and hold water. Refill system with the fresh oil to the recommended level.
- The equipment should be “exercised” routinely during the shutdown and especially before startup. The exercise will circulate the lubricant, refreshing the oil film of the component surfaces and filter the oil.
- The exercise will also purge grease through lubricated cavities with fresh grease to remove the contaminants just prior to start up. Purge grease manually if automatic grease lube system is not present.

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- When equipment is not running, lube system reservoirs continue to breathe. Check condition of desiccant breathers and replace before startup if they are expired.
- Clean the external components such as hydraulic cylinder rods. If left in the extended position, they may collect large amount of atmospheric contamination. Remove rust preventives if they were applied during shutdown.
- Rust preventatives with VCI (vapor-phase corrosion inhibitor) which were used internally for protection of closed systems, such as gearboxes or hydraulic reservoirs, may be incompatible with the gear or hydraulic oil. If compatibility of rust preventative and oil was not tested before the application, take oil sample and see if it is showing haziness, separation or residue which is an indication of incompatibility (see picture below).

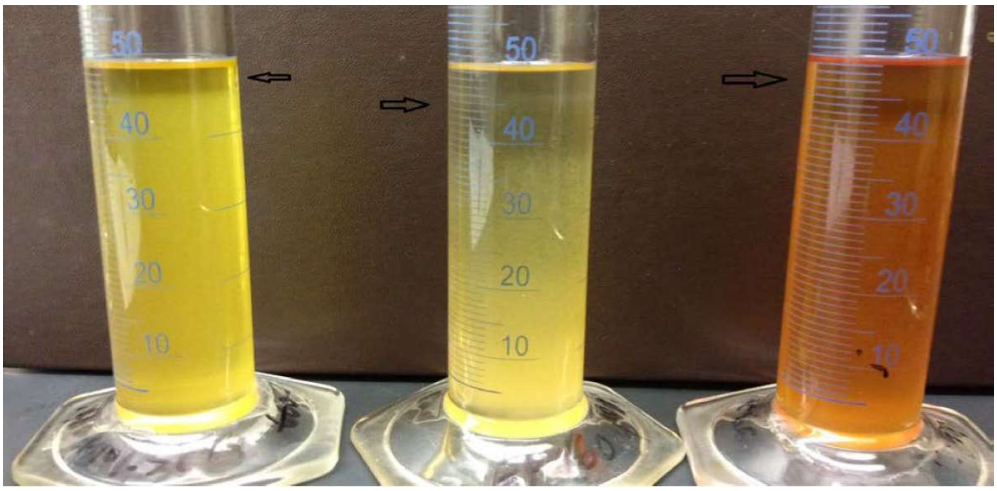

Photo showing haziness / separation in samples of gear oils mixed with VCI rust preventatives, indicating incompatibility

- If an indication of incompatibility is not noted, repeat this procedure after one day of operation at working temperature. Rust preventatives and oils may be compatible at ambient temperature and incompatible at the elevated working temperature. Change oil if incompatibility is noted. Contact Castrol Industrial Engineering and Technical Support for most effective changeover procedures.