

TECHNICAL BULLETIN

Extended Shutdown - Best Practices Central Systems and Individual Tanks

OVERVIEW

The **Extended Shutdown Best Practices** technical bulletin is intended to provide guidance for shops that, for whatever reason, may be shutting machines down for 2+ weeks BUT want to keep the coolant in the machines AND want the coolant to be usable when the machines are brought back into production. Use this process to minimize the potential for machine corrosion and degradation of the metalworking fluid during shutdown.

These shutdown best practices are written to be applicable for both central systems and individual machine tanks. Care should be taken on central systems to include all of the supply lines, return flumes and return line pumps-backs in any of the steps that include directions for auxiliary pump inclusion in the process. If there are any questions about the specifics of your systems or machine, please do not hesitate to contact QualiChem Technical Services before you begin.

The short version of this process is as follows:

1. Determine which machines have coolant that should be saved and which machines should be dumped and left empty. For coolant that will be saved, proceed to step 2.
2. Remove tramp oils and other debris from the coolant surface, machining area and chip conveyors.
3. Adjust the concentration into the higher end of the coolant's recommended usage range. For most coolants this will be around 12%. It may be necessary to measure and adjust pH as well.
4. Circulate the coolant periodically during the shutdown, use a light rust inhibitor on ferrous surfaces in the event of an extended shutdown.

For a more detailed step-by-step process, please review the following.

PREPARING THE MACHINE AND THE COOLANT FOR A SHUTDOWN:

1. Before proceeding, it is best to determine which coolant tanks are and are not suited for the shutdown procedure.
 - a. Measure the concentration and, if possible, the pH of each machine that is intended to be shutdown.
 - b. In the case that coolants are significantly out-of-spec, consider vacuuming the coolant out now, leaving the sumps dry during the shutdown, and refilling with fresh coolant when the machine will run again.
 - c. Machines that are in-spec or nearly in-spec, will be suitable for shutdown
 - d. If you are unfamiliar with the specifications needed for your coolant and system specifics, please contact QualiChem Technical Services for assistance, especially regarding central systems.

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2. Before any adjustments are made to the coolant, it is important to remove all free-oils (tramp oils) from the surface of the coolant tanks (sumps) or central systems.
 - a. This can be done with a shop vac or any number of commercially available tramp oil removal systems. However, for the sake of time, a shop vac is usually effective when preparing for a shutdown.
 - b. Skimmers and Coalescers can be used, but are usually more effective at keeping the tank surfaces clear as part of a comprehensive coolant maintenance program. These systems will remove free floating oils slowly
3. Remove any chips, dirt and other foreign debris from inside the machining area and in the tank.
4. After free floating oils and chips are removed from the machine tank, adjust concentrations to the high end of recommended range for your specific coolant.
 - a. For example, if you are using a coolant that has a recommended operating range of 5%-12%, adjust the concentration in the machines to 12%. The higher concentration will help provide added corrosion and biological control during the shutdown.
 - b. If possible, leave space in the tanks for diluting down the enriched coolant once production resumes. Otherwise coolant will need to be removed later for to allow space for dilution from the higher concentrations.
 - c. If you are unsure how to and by how much to enrich the concentration of coolant already in the machine, please contact QualiChem Technical Services. Normally this is done by pre-mixing a very rich concentration of coolant in a pail, then adding it to the machine. We do not usually recommend adding concentrate to the machine tank unless it is certain that the concentrate will get properly and completely mixed into the coolant.
5. Allow the coolant to recirculate for 30 to 60 minutes. Please be sure to run any auxiliary pumps, filtration systems and high-pressure systems at this time.
 - a. Recheck the concentrations to verify that the increase has been successful.
 - b. If the machine is equipped with a wash down hose, this would be a good time to wash down all surfaces inside the machine.
6. Any machines that were found to have a pH below 8.9 in step 1, the pH should be rechecked after the concentration enrichment and recirculation are complete.
 - a. If the pH remains below 8.9, add **pH Boost 95**. Contact QualiChem Technical Services for details and directions. **pH Boost 95** is an additive available through your authorized QualiChem Distributor.
 - b. Please note that some coolants are designed to operate with a pH around 7.5, however, the vast majority operate around pH 9.0. QualiChem has several neutral pH synthetics, so please consult QualiChem Technical Services if you have questions.
7. If machines are expected to be down for more than 3 weeks, consider applying a light rust preventative to the inside of the machine tool. A product like QualiChem's Q-SHIELD 665 would be well suited for this task. In central systems, be sure to include all system components in this process.

DURING A SHUTDOWN:

1. For shutdowns that exceed 2 weeks, periodically recirculating (or aerating) the coolant will help minimize the potential for biological activity. This should include recirculating through all auxiliary pumps, filtration systems and high-pressure systems.
 - a. Recirculate the coolant on a daily basis in machines that have a track record of being difficult to maintain. Otherwise weekly recirculation should be sufficient for most other machines.

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2. Keep the doors on the machines open to allow air to circulate and reduce humidity and condensation from building up. This minimizes the chance of machine corrosion (rust).

AFTER A SHUTDOWN:

1. Concentrations will need to be reduced back into normal operating ranges.
 - a. If space was left in the machine tank in the preparation stage, then filling the machine with a very dilute mixture of coolant (0.5% - 1%) can be used to reduce the concentration of the tank.
 - b. If no space was left in the tank, then it will be necessary to remove some of the enriched coolant to make space for a very light dilution of coolant. The enriched coolant can be set aside and used as top off, though it may be necessary to dilute it before use.
2. Upon return to production, your QualiChem Sales Engineer is available for additional help.

Our Technical Services Team has decades of experience with managing both individual tanks as well as large centralized coolant distribution systems. Do not hesitate to call for their assistance.

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