Coolant Monitoring – System Health Factors

Introduction

In our March Newsletter, we covered the importance of keeping your coolant's concentration in check. This month, we will review a number of factors that can influence overall system health and condition. Monitoring the concentrations or ratios are just the beginning of proper sump care. In order to truly gain your coolant system's highest performance, be mindful of these influencing factors:

Proper Mixing

All too often, too little thought goes into how coolants should be mixed. People fill up their tanks with water and then pour in the coolant concentrate, thinking the pump and movement in the sump will mix things up. This can lead to the product creating an inverse emulsion (which looks like a gel), and adding too much concentrate due to inaccurate refractometer readings. **Remember *"O.I.L"* - "Oil in Last"**. By following this acronym, with agitation, you will ensure your coolant forms a stable emulsion or bond.

Think back when you were a child, and you put that delicious chocolate syrup into your glass. When you did, it stuck to the bottom and sides. Then you would pour in your milk, stirring the heck out of it, and getting the chocolate milk you were looking for. After drinking the glass, you probably still had chocolate syrup stuck to the bottom of the glass. Same thing happens with your coolant mixing. Had you done it in reverse, pouring in the milk, start stirring the milk, and then adding in your chocolate syrup, you would have a perfectly mixed glass of chocolate milk to enjoy!

We can all agree that mixing coolant by hand can be a laborious effort, especially if you need to mix up 50 gallons or more, using a 5-gallon pail as your mixing container. At this point, you need to consider one of the many mixing devices on the market to get the right concentration.

Provided the coolant concentrate is not too viscous, you can use a **Venturi-type proportioning valve**. Water flows across an orifice, creating a low-pressure zone, pulling the coolant concentrate into the water flow. These types of mixers are well suited for synthetic coolants, thin viscosity concentrates, and low running percentages. They only cost a few hundred dollars, and are easy to set up and operate. The coolant ratio can be affected by the water pressure and viscosity of the coolant concentrate, so be sure to check your final results with your refractometer.

Another mixing device is a proportioning valve, similar to the **Dosatron** or **Hydroblend** mixers. Both units are adjustable to an exact ratio of water to coolant concentrate, regardless of the water pressure, and provide volumetric displacement, creating a very accurate coolant mix. Depending on the unit and configuration, these types of units will cost around several hundred to a few thousand dollars.

Dosatron mixer

Hydroblend mixer

If you need to fill numerous machines and require a variety of coolant concentrations, it is important to look into these in more detail. In this situation, your oelheld Sales Engineer can assist you in selecting the proper unit for your operations. *For more information, reach out to us at or call* ***847-531-8501.***

Removing Tramp Oil

Abanaki skimmer

While the hydraulic, spindle, and way lubricants are critical for the operation of your machine tool, they can play havoc on your coolant. These "contaminates" are prime factors for inviting biological issues, de-emulsification or splitting of your coolants, leading to reduced performance. Many coolants are designed to reject some tramp oil, but if the product was not mixed properly (creating a tight bond of the water and concentrate), tramp oil can find its way into these bonds. Tramp oil removal from systems, on a regular basis, is required. Install a disc or belt skimmer in a quiet area of the coolant tank, if possible. A timer can be set to run the skimmer during off hours, allowing the tramp oil to float to the top, and made easy to skim off. **Abanaki** and **Zebra** both manufacturer quality units.

Clean Machine Sumps & Chip Maintenance

With proper control of your coolant concentration, keeping the pH within range, proper mixing, and removal of tramp oils, you should expect your coolant sump to last well over a year.

One maintenance item to consider, in achieving this type of longevity, is not relying solely on your chip conveyor to remove chips. Make sure to routinely clear out the auger screw area and chip conveyor, as the excess material will degrade the coolant. This inhibits the coolant's ability to prevent corrosion and deal with extra solids.

Another method to keep your machines clean: install a splitter on the coolant supply line, and keep one tied into a spray wand for daily or weekly rinse downs. With this set up, you will be able to rinse areas of the machine that only get overspray, or seldom use. Any residue build up and chips sticking to the sidewalls will be a thing of the past. Push all these foreign materials to the chip conveyor and sump, were you can deal with it properly.

One last, simple method to keep your coolant and sumps cleaner is to utilize furnace filter batting. If your coolant sump does not have a filter bed or chip collector, you can purchase this material from nearly any industrial supply house. Just cut it to size, and place it on the coolant flow returning to the sump. You will be surprised at the amount of particulate it will catch. Moreover, you are doing your coolant pumps a favor by reducing the amount of recirculated particulates within your system

Conclusion

Maintaining your coolant is an important part of overall system health and performance – do not let your metalworking fluids go neglected. With a little effort, you can get the most out of your coolants: reducing unpleasant odors, staining and rust, improving operators' working environments, and keeping coolants in tip-top shape for the long haul.

Until our next issue, do not neglect your coolant, as it will be sure to let you know it is not happy on Monday morning! ***If you would like to implement a training and monitoring program, contact us,*** *and we can assist you in reaching your goals.*

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