



Lengthening Cleaner Life Through Recycling Technologies

Recycling a cleaning agent is the Holy Grail of running a cleaning bath. In theory, with perfect separation, a cleaning bath should last forever. Alas, contrary to what some salespeople may tell you, such a system does not exist. However, the technology is improving all the time and maybe such a day is on the horizon. There are certainly examples of very effective technologies that have greatly increased the life of a cleaning agent. These next couple of monthly letters will discuss two of the most common technologies used to lengthen bath life: oil skimming and micro-filtration.

Oil Skimming

Just about every machine used to clean parts with aqueous chemistries contains an oil skimmer or an option to add one. An oil skimmer is usually a belt or a wheel that is partially submerged in the cleaner bath. As oil is cleaned off into the bath it splits to the top of the liquid where it is picked up by the skimmer and rubbed off into a bucket or catch pan for disposal. The theory is that with the oil removed, the cleaner can return to the tank and continue cleaning. Additionally, it's a lot cheaper to dispose of a few gallons of oil as opposed to the few gallons of oil with lots of gallons of cleaning bath along with it.

In practice, oil skimmers work fairly well but there are inherent problems that limit their effectiveness. First, a chemistry that splits oils must be used for an oil skimmer to work. An emulsifying chemistry (one that holds soil in solution) will not allow a skimmer to separate the oil. Second, the cleaning bath must be still enough to allow the oil to separate. For this reason many firms shut off the unit for a couple of hours to let the oil separate in a "quiet" tank and then skim it off. Third, the chemistry must be able to split the oil cleanly to avoid removing essential cleaning agents with the oil.

This third issue is usually what limits the effectiveness of the skimmer. No oil separation is perfect and thus an oil layer usually contains certain elements of the cleaning compound. Surfactants, defoaming agents, rinse aids, etc. can all be present in the oil layer. Thus, they can be removed by the belt or wheel. Someone using a standard titration to check cleaner concentration would not detect any problem but all of a sudden the cleaning bath may start to foam or the parts start coming out dirty. What is often blamed on a lousy cleaner or a short bath life is actually a function of constituents of the cleaner being removed during the skimming operation. There is little that can be done to alter the composition of the cleaning layer but being aware of the issue at least allows intelligent decisions to be made regarding how best to use it. The ideal method is to allow the tank to settle quietly, allow the cleaning solution to cool (oil generally separates better at cooler temperatures) and skim off the oil without turning the machine back on.

As we all know, operating pressures rarely allow for such an extended shut down of equipment. However, by utilizing a skimmer in a manner as close as possible to the ideal conditions recommended by the manufacturer, cleaner life can be extended and the skimmer will often pay for itself very quickly.

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