How Do I Know When My Cleaner Is Spent?

An important variable in controlling costs in a cleaning operation is to make sure the detergent is used for its maximum life prior to dumping the bath and changing it out. The longer one can use a given cleaning bath, the more the operation can save in reduced cleaner usage, fewer shut downs for change-outs, and fewer issues with disposal. Unfortunately, there is no universal way to determine when a cleaning bath is no longer capable of cleaning a part (or, what would be even more helpful, no way to tell when a cleaning bath is about to expire). There are several "rules of thumb" that can be helpful and some other information that can guide usage and these are discussed below.

Initial Charge

Once a selection is made to choose a cleaning agent, an initial charge of some concentration is usually added to the wash zone of the cleaning equipment and diluted with water. This pristine product is ready to deliver the maximum performance expected with regard to cleaning. As soon as some contaminant enters the wash bath from being cleaned off of parts, several changes begin to occur that negatively affect the cleaning performance.

pH Change

In most cases, the addition of soil into the bath will have an effect on the pH of the cleaning bath. Most general cleaners are alkaline and thus have an elevated pH. As soil loads into the bath, the alkalinity of the bath is reduced and the pH begins to fall. Eventually, the pH falls to a point where the cleaning declines to unacceptable levels. This gives rise to Rule of Thumb #1: "When the pH drops 1 full point, its time to add cleaner or change the bath". This rule is not too bad and can serve as a quick guideline or check. Generally, when the cleaning begins to decline, the operator will add more cleaning agent to make up for the "spent" product. This has the effect of raising the pH and the cleaning usually improves. However, the pH usually cannot be raised all the way back to the pristine bath condition pH and settles a little lower. Over time, adding material back no longer improves cleaning and the bath must be changed. This gives rise to a slightly modified version of the Rule of Thumb #1 where the bath is changed once adding cleaner can no longer get the pH to with 0.5 units of the original value.

Volume of Additional Chemistry

Some firms keep close track of the amount of chemistry they add to the bath once the cleaning process starts. This make-up chemistry extends the bath life as described above. An even simpler rule to track than pH measurement is Rule of Thumb #2: "When the amount of cleaner added after start-up equals the amount of cleaner used to make up a fresh bath, its time to dump the bath". In other words, if you use 10 gallons of chemistry to prepare the initial

cleaning bath, after adding 10 gallons of chemistry during the subsequent days of cleaning its time to stop and change out the cleaning bath. This rule generally works fairly well and provides a low cost way of keeping a bath running. However, unless detailed testing is done it could be indicating a changeout prematurely and costing a company money in unused cleaning potential of the solution.

Time

The most common method of determining bath change out times is just to choose a time that is convenient to the operation and dump the bath on a regular schedule. Rule of Thumb #3: "Dump the bath every week (or 2 weeks or month, etc.)." This is initially determined by some testing on how long a bath can last and then backed off to allow a safety factor. Since this method is usually dictated by the timing of operations in the facility and not by any real cleaning properties, it has the potential of wasting a lot of cleaning capacity of the detergent soap. Also, as production varies, very few companies review the procedure which may no longer be applicable if production has been notably increased or decreased. However, as this method is the simplest, it will most likely remain the most commonly used.

Other Methods

In efforts to increase the use of cleaning agents, some firms have developed and successfully applied different technologies to help determine effective cleaning life. Soil loading tests and conductivity measurements can be used to help determine the effective life of a cleaner but require more technical understanding to be properly used. Recycling technologies may also be used to lengthen bath life but must be understood to insure certain properties of the cleaning agent are not disrupted.

In short, the life of the cleaning chemistry in a machine is very dependent on the specific operation, but some general rules have been developed through experience to be a guideline to tell an operator when its time to change a cleaning bath.

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