

How Does pH Affect Cleaning? Session Questions and Answers

Q: What is the average cycle time for a batch cleaner?

A: Typical cycle time on batch cleaner is between 45 minutes and maybe an hour and 15 minutes. That is the complete wash, rinse, and dry cycle. Like I said, if you're running an OA process you can cut the time in half because if you clean in a certain amount of time, your OA process is easier to clean.

Q: You talked about board shadowing, what's the best way to avoid that?

A: Pay attention to your spray chamber and make sure that you give it some kind of gap between placing product in the basket itself. If you're thinking about rotating spray bars that are spinning in the machine you have to give them deflection at board level. In my opinion, keep boards away from the edges and typically three inches between product.

Q: Can a batch washer be a zero-discharge system?

A: Absolutely. Manufacturers of batch machines make these because they are aware that sometimes it doesn't drain to local drain systems. They can actually put DI systems on the machines and make them all zero discharge machines. So, the answer is yes.

Q: Should I use coherent or fan style nozzles or does it matter?

A: I think it depends. If you have a rotating type spray system, you will want to use the fan type nozzles. If you have a set basket that you're spraying and sitting vertically, I think you could use a coherent jet. To give you impingement at the board level, I think coherent jets do best cleaning because they are a lot higher pressure and do a better job of cutting a river or channel, or underneath your components. It just really depends on what your system is. Fans for the most part are rotating and if you have vertical sprays, a combination of both will do an excellent job.

How many rinse cycles would you typically recommend for a batch machine?

A: When you're rinsing in a batch machine, a lot of people think that if they use a long rinse cycle that is the goal or recipe they need. Short cycles, 30 seconds per cycle, most of these batch machines measure conductivity after rinsing. I would run 30 second cycles and typically in a batch process, you're going to run 3-5 of those rinse cycles at 30 seconds per rep. On average, 3-5 or 3-6 rinse cycles is what I would recommend and of course if you have this intelligent rinse with conductivity meter, it can tell you where you need to be at end of rinse cycle.

Does a batch machine consume as much chemistry as an inline?

A: Absolutely not. If you think about an inline, the board is sitting horizontal running down the conveyor and everything being carried into the chem iso in the rinse section is basically just wasted chemistry. Inlines do a very good job of getting that

off and batch machines do an excellent job of getting it off. Most boards are sitting vertically, so they can drain in a batch machine. A batch machine consumes very little chemistry per cycle and even at the end of the day compared to an inline machine.

Would you recommend staying below 5 megaohms for the final rinse or lower?

A: Usually, these machines are measuring conductivity which is absolutely the opposite of resistivity. A lot of customers are running 5-10 megaohms. When you get down to the 2-5 conductivity micro siemens, they are basically staying down low. The lower you go on conductivity, the rinse cycles if it is running an automatic cycle. I would recommend running between 5 and 10 micro siemens, the conductivity in the batch machine.

How do you determine bath life in a batch machine?

A: It doesn't matter if it's a batch machine or inline cleaner. Chemistry for both suppliers third party labs NVR testing multiple residues and that's the best way to evaluate that. Basically, they take a sample monthly and at some point when that bath is loaded, you can measure that off of cycles or pump run time if it's an inline machine, to determine the best time to change that out. Typically, batch machine chemistry lasts a long time in the batch machine before you have to clean it out after bath load.

Which is better? A single layer wash basket or a double layer wash basket. Does dual layer cause major shadowing issues?

A: If you do not have a spray system, a manifold, or a spray wand between those two baskets, absolutely. You're going to have major shadowing issues. In most cases, if you have a top rack and a bottom rack, there is usually spray bars above, in the middle, and below. It does a very good job cleaning it, as well. Like I said, keep in mind what is happening on the edges of that basket when you're taking about rotating spray systems.