Powder Coating Commentary

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Preparation for Powder Painting: A Systemic Perspective

In the traditional sense, preparation or cleaning denotes: "How do I get the parts and surface clean and ready for powder coating?" Anyone considering conversion from liquid coating to a powder finish might be interested in how the preparation for these finishes might differ. First, it is necessary to determine if the parts being coated require a class A finish (automotive exterior or high-end appliance), a class B finish (exterior surfaces that a consumer might see, and expect the appearance to be high-end), or under-body/under-hood (the coating has to look good, but the quality of the part is not measured by appearance, just performance).

Judging from my past columns, readers should not be surprised that I would take a "different perspective" to this topic ... so here goes.

How Clean is Clean?

Cleaning is relative. Therefore, preparation is relative. When a client says to me he wants his parts clean, I ask how clean. When he says he wants them clean enough to hold the coating, I ask for how long and to what specifications. How much time do you have to clean the parts? Is the process manual or automatic? Are you immersing the parts into the pretreatment, or spray-washing? Are your parts actually *your* parts, or are you coating for someone else? In any event, do you plan to treat all the parts the same, and obtain the same level of performance for all productions, or are some surfaces expected to meet different requirements?

Okay, so now we agree on the part-cleaning expectations—regardless of whether it's an iron-phosphate coating or a zinc-phosphate coating, or a three-, five-, seven- or nine-stage process. We agree that the pretreatment suppliers are an integral part of your future ability to consistently meet quality and cost targets. Now what? End of article? The parts are clean ... the next step is to paint them. Is that a different process and different article for another day? No way!

How to Keep Parts Clean

Are your clean parts now traveling through a dirty, weld-smoke-containing, airborne-particulate-containing, material-handling process that is open to the plant's environment? Probably. Are the clean parts still clean? Probably not. Should they be contained in clean tunnels or enclosed until the next step? Yes.

If the next step is to dry them off, will it be a forced-air or heated environment? Are the parts expected to "drip dry"? I know my wet car, for example, after going through a car wash, attracts dirt going down the highway after my $3 no-post-drying drive-through. Why wouldn't the parts we just processed do the same?

Okay, so we now have a tunnel or enclosure to this point. (Dave gets his way again.) And we agree that the finish requirements dictate drying them before coating. Is the oven or enclosure filtering the air through high-quality filters? Is the enclosure designed for deep cleaning to continually remove accumulated dust and dirt? Good. Learning from our past mistakes, we now process these clean, dry parts all the way to the coating booths or environment through ... tunnels or enclosures (Good—you're still with me!) and paint them. Perfect parts, right? Now what? End of article? The parts are clean ... we are about to paint them ... different process and different article for another day? No way!

What's Next?

Remember the question about class A, class B, under-body, etc.? The answer will dictate the level of controls and components in the powder process for the room where the powder booths are located. Temperature and humidity controlled? Dry-walled, paneled, masonry-type construction? Are the painters dressed so as to minimize introducing contamination to the parts and large vacuum system into which they are spraying? Are you sieving the powder? With generic sieves or high-quality ones? Through what mesh? At what quality level is the powder manufactured? What type of filtration media are used? Non-linting cartridges or sintered elements? *Are you sure?*

Okay, we've cleaned up the application process and designed into it what is necessary to minimize the introduction of contamination that might affect the appearance of our parts. Now what? End of article? The parts are clean, dried and painted. The next step is to cure them, pack them and move on ... different process and different article for another day? No way!

Curing & Packing

Remember that tunnel or enclosure? Do we still need one between the coating and cure processes? Yes. Do we require the curing ovens, whatever style—IR, forced-convection, high-velocity, etc.—to be pre-filtered with high-end filtration and designed for periodic deep cleaning? Yes. Done? No ... uh, not yet ... well, it depends. If our parts are under-body or assembly-type parts, probably. If our parts are used in class A or B applications, probably not. Why? Can you say "packaging"?

Continued on p. 57