

## NICK'S NICHE

### Guest Column

# Is powder coating living up to its reputation?

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When I first entered the powder coating industry in 1980, very few people even heard of the technology, including me. I'm sure this was true with many people who started with this finishing technology back then, as it was only first introduced to the USA in electrostatic spray form in 1969. In my case, I was applying for a project manager's position with a company that happened to produce powder application and recovery equipment. I didn't care about the technology, necessarily, just the job I was being offered and how this position would fit into my engineering career path.

Oh sure, I was pleased to hear that this method of "spray painting" products was environmentally friendly, economical to use, provided an excellent finish, and used less energy in the process. Back then, we called this the "four Es" of powder coating. There was a "fifth E" for a while, but I don't remember what it was. That's the problem with being middle-aged, your memory just isn't the same as it once was.

Back then, when anyone asked what you did for a living, the answer often prompted a very quizzical look

from the person who asked the question. You had to explain the technology and point to several everyday products coated with powder that they come into contact with to get the point across. It used to always "bug me" at the effort it took to just answer the simple question "So, what do you do for a living?" especially since this is normally the first or second topic in any conversation between two people who just meet.

#### **Promoting a new finishing technology**

Selling this technology was a real chore back then, as both equipment and material suppliers had to first educate their potential customers in the technology before they could even start talking about their company and products. It was so bad that around 1981 several prominent suppliers in the powder coating industry got together to form the Powder Coating Institute (PCI) and chartered it to "educate the marketplace and promote the technology." This was not the easiest thing to do, as these founding members were ardent competitors with divergent agendas. Just having these companies in the same room was a diplo-

matic feat of epic proportions! However, this common cause was so significantly important to all parties that they put aside their differences and set about the work of helping the infant industry survive and thrive so that everyone would benefit.

PCI took its charter seriously and with membership help heavily promoted the technology by using a variety of tools. There was the Powder Coating Mark, the Powder Coating Handbook, regional and national trade shows, training courses, seminars, and national advertising, just to name a few tools employed to promote what was then an obscure technology. It was difficult at first, but then momentum started to build. Now almost everyone talks about powder coating technology and its benefits. You can't watch any Saturday morning TV automotive or motorcycle "how to" show without hearing the words powder coating at least a half a dozen times. Even Sears and Eastwood have powder coating equipment and supplies for sale to the hobbyist market in their catalogs!

Over the years, I've written numerous articles to promote the features and benefits of powder coating as "superior" to all paints and enforcing the concept of powder coating's ease of use. However, now I'm having some second thoughts that I've helped the general public think that powder coating is the Superman of all finishing technologies. "Why's that?" you may ask. It's because most people only hear what they want to hear and read only part of the story without examining the "fine print." What they often miss is the proverbial out clause: "Your results may vary." They go with using powder coating in suspect and ill-defined applications, expecting that it will perform better than anything else on the market. Occasionally, it all works out, but more and more often it doesn't.

When powder coating was still relatively unknown, the person looking at it for the first time would investigate all aspects of the technology and test their products with the fin-

ish before risking their career by making the decision to switch. This was prudent, considering there wasn't as much anecdotal data available that showed if powder coating was the right choice for their product or project. This due-diligence approach only added to the success stories of powder coating and helped build the legend that we all continue to embrace today. But has this legend building and technology boosting gone too far? Maybe it has.

Over the past decade, our company has seen many applications that were a stretch, at best, for powder coating technology. On numerous occasions, we often heard from people or companies unsatisfied with the powder coating performance on their product or project. Often, they proudly said: "We thought if we stated 'Powder Coating' on the drawing or purchase order that we would never have to worry about coating performance." It's as if just using the words "Powder Coating" would completely describe exactly what they needed for coating performance. When we asked to what extent they had investigated the suitability of powder coating performance for their product before they coated it, often they would say: "We only decided on the color of the powder coating and nothing else." This statement prompts our standard reply: "Was the powder coating the right color? If so, then it met your original expectation." This "fire and forget" mentality has led to many a lawsuit, costly warranty claim, or more costly product recall because the expected coating performance was never defined or achieved.

### Testing is key to coating performance

Avoiding these career ending, or company ending, mistakes requires a trip "Back to the Future" where you should be convinced "beyond a reasonable doubt" that powder coating can provide the performance you need and expect on your product or project. Having a little healthy skepticism is a good thing. It will make you fully vet the technology before you select it and ensure your "leap of faith" isn't off a cliff. Following are

a few pointers when performing this due-diligence effort:

1. Understand the coating performance for your product or project. This expected performance must include all appearance (color, gloss, smoothness, etc.), mechanical (hardness, chip resistance, impact resistance, etc.), environmental (corrosion resistance, chemical resistance, humidity resistance, etc.), and post-coating manufacturing (forming, machining, silk-screening, etc.) requirements.

Try to establish quantifiable parameters (numerical values that can be tested and verified) for this coating performance. This effort may require testing of existing product or collecting data from customers or actual field experience.

2. Commit this coating performance to paper by writing a coating performance specification. Don't be afraid to include too much information; you can't assume that the person reading this document knows more than you do and can "fill in the blanks" for missing items. Leave as little information as possible to interpretation.
3. Use these specifications to select substrate pretreatments, powder primers, powder topcoats, and so on. If you cannot find substrate pretreatments, powder coating primers, or powder coating topcoats to meet these requirements, then look at completely different coating technologies (for example, plating, anodizing, galvanizing, liquid coatings). This is not to say that these other technologies are "better" than powder coating for all applications. It just means that they may be better in this particular application.
4. Verify your selected coating technology (powder coating or otherwise) by testing before you commit any resources for a product or project design. The folks from Missouri have that famous "show me" attitude that we can all learn something positive from. If you have the luxury of time, put some

newly coated product into the field to see how it performs under real-world conditions. Get some of your competitors' product and test it for coating performance to determine if your target is reasonable. You may end up revising your coating objectives based upon the results of testing or real-world experience gained from this important verification process.

5. You may want to take a conservative approach at first and have your product coated by a job shop until you confirm the new coating will meet or exceed all your performance objectives. This affords you the opportunity to try out the coating before you commit capital funds to purchase new equipment or modify your existing equipment or process. Use your coating specifications as the requirements that the job shop must perform to coat your product and pay for the coating after the performance has been confirmed by test (on coupons or actual products).
6. If you plan to do the coating yourself, then verify what you will need to do the job correctly. If you are using an existing finishing process that may need modification to support powder coating, then ensure that the common system components will work with powder. For instance, is the pretreatment system capable of providing properly cleaned and pretreated parts for powder coating? Are the parts completely dry before you powder coat them? Do you need a new spray booth to collect the overspray powder? Can your cure oven bring the parts to the powder cure temperature for the prescribed cure time? Is the conveyor spaced sufficiently from the parts to ensure the powder will not accumulate on the rail or chain? If you are buying new equipment, will it meet your coating performance objectives?
7. If you have to purchase some or all of the equipment necessary to apply the pretreatments and powder coatings on your product, then write a detailed powder coating process equipment specification to

include all your expected performance data. Include any test information that you may have learned along the way, such as product bring-up temperature charts for proper oven design. Inform the equipment suppliers of any special features in the finishing that you want or need. Don't forget to include plant utility and your detailed product information, like weight and surface area. A few product photos can help a lot. Last, make sure your process specifications will be verified in acceptance testing after the equipment has been installed and before final payment is made to your supplier(s).

This approach may seem daunting at first. However, help is available from companies like ours that are suited in performing these tasks in an efficient, independent, and unbiased way. Using this expertise will reduce your risks and increase your chance for success. Unfortunately, there are no shortcuts here. This tried-and-proved methodology is the only way you will ever obtain a coating or finishing process that will meet your expectations. The alternative is to gamble on coating performance, select the color you want, and hope for the best. Just be sure your resume is updated, or you have another career path planned when your company goes out of business.

I started this column with a question: "Is powder coating living up to its reputation?" The answer could be: yes or no. For those of you who use the due-diligence approach detailed here to select the appropriate method of coating, the answer will be unimportant as you will have proven results and no risk of product coating failure. However, if you decide to use the fortune cookie, crystal ball, or rabbit's foot approach, then you cast your fate to the coating gods and may have catastrophic results. The only question that really matters is: "Do you feel lucky?"

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### Editor's note

For further reading, see the "Index to Articles and Authors 1990-2009," Reference and Buyer's Resource Issue, *Powder Coating*, vol. 20, no. 9

(December 2009), or click on the Article Index at [www.pcoating.com]. Article can be bought online. Have a question? Click on Problem Solving to submit one.

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