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PLASTIC MAN

Finishing entrepreneur Robert Langlois says he's found a way to powder coat plastics. Yeah, we know. You've heard that one before... Oh, by the way, did we mention that he's coating more than one million sq ft of plastic per month?

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Mr. McGuire: I want to say one word to you. Just one word.

Ben Braddock: Yes, sir.

Mr. McGuire: Are you listening?

Ben Braddock: Yes, I am.

Mr. McGuire: Plastic.

Ben Braddock: Just how do you mean that, sir?

The excerpt of dialogue above, from the 1967 film “The Graduate,” is one of the most memorable exchanges in movie history. It also proved to be remarkably predictive, given that plastics have come to play a major role in almost every aspect of daily life.

Almost.

Plastics have been remarkably elusive where powder coating is concerned. Despite major advancements in both industries, plastics—given that they are non-conductive—don’t lend themselves particularly well to the application of powder coatings, an electrostatic process. Nor have they proven to be a very good fit for high-temperature cures.

Sure, some in-roads have been made recently. In the past eight years, plastics giants like GE have developed conductive resins capable of being powder coated. On the curing side, UV curing has emerged as a means of overcoming the issues associated with curing in conventional ovens. And interest on the part of finishers is certainly huge, if the packed room at the “Powder Coating on Plastics” session at Powder Coating 2004 is any indication. But so far, the costs associated with many of these solutions has been restrictive, and a firm handle on powder coating on plastics has remained elusive.

Enter Robert Langlois, the President and CEO of Toronto-based Alliance Surface Finishing. Three years ago, after selling his company, Surface Coating Industries (a provider of PVD coating services), to a German concern, Langlois had a conversation with an automotive Tier One supplier that would alter the course of his professional life.

“I asked them, ‘what would be your dream?’” says Langlois, seated at a confer-



Fixture parts travel through Alliance’s powder coating system on an inverted conveyor in order to prevent contamination from falling debris.

ence table at Alliance’s Scientific Research and Experimental Development Facility in Vaughan, Ontario. “Their response was that they wanted a cheaper way to paint plastic parts.”

Though Langlois had virtually no experience with powder coating, he knew of its reputation as a clean, cost-effective, flexible technology with tremendous potential. He also knew that its two biggest hurdles—in terms of painting plastic parts—were the fact that it requires the substrate to be charged and that the heat required to cure most powder coatings would likely compromise many parts.

In many ways, Langlois’ inexperience with powder coating enabled him to take an approach to the problems that was com-

pletely unorthodox. “I think the tendency is for a powder manufacturer to look only in the direction of the powder coatings” he says. “Likewise, a resins manufacturer might only look in one direction.” Langlois says that, as someone relatively new to the powder coating industry he was equipped to take a big-picture look at the obstacles, and come up with a process that took a number of aspects into consideration.”

Langlois also attributes part of Alliance’s success to the formal strategic alliances the company has established with a handful of industry suppliers, including powder coating supplier PPG.

A full-time PPG staff works out of the Vaughan R&D center, assisting the Alliance staff with analysis, powder selection, sampling and line set-up. “We chose PPG because of their very diverse industry knowledge,” says Langlois. “They deal with everything—automotive, recreational, electronics... There are a lot of [supplier] companies out there that focus on a specific area, like automotive or industrial. But we knew that we wouldn’t be focusing on a single area. PPG has a global presence in virtually every industry, just as we think our technology will appeal to every industry.”

Alliance also works closely with Nordson Corporation, which provided the company with custom-designed application equipment. On the resins side, Langlois has non-formal partnerships with BASF and Bayer.

Formula for Success

Langlois, not surprisingly, is keeping the specifics of his process (which he has patented) under wraps. He does, however, reveal a few details that offer some clues as to how the process is, and is not, being performed.

He makes clear, for instance, that Alliance’s application process—which is trademarked as the Alliance Powder System—does not rely on the use of conductive plastics. Instead, the key lies in the powder, and how it is applied. “Our approach is process-oriented,”



Langlois says that his company’s ability to successfully powder coat on plastics relies in large part on its use of a controlled, contamination-free environment.



Alliance had office chairs, such as the one shown here, on display at Powder Coating 2004.

he says. “We’re powder coating on a wide variety of materials, including nylons, nylon blends, ABS Blends (acrylonitrile-butadiene-styrene copolymers), SMCs (sheet molding compounds), PETs (polyethylene terephthalates), Lexan, high-temperature polycarbonates and others.”

Langlois also divulges that Alliance’s adeptness for powder coating plastics depends largely on its ability to operate in a controlled environment, devoid of the variables that often exist in a typical job shop setting. To that end, the company’s production facilities feature Class “A” paint systems with class 10,000 clean rooms suitable for class “A” surface automotive finishes, akin to the state-of-the-art clean rooms found at the highest order of liquid painting.

“We hear a lot of other people say they know someone who is doing powder coating on plastics,” says Langlois. “And there probably are some people who are doing it on a hit-and-miss basis. But being able to do something consistently and do it well demands the investment in custom equipment that we’ve made, and the controls that we have in place.”

Cleaning, pretreatment, powder coating and curing of parts takes place within an in-line system using inverted conveyors so that dirt and oils are not falling down on to parts. Parts are also fixtured, as opposed to hung, so that gun-to-part distance is constant. Curing is performed using a combination of IR, UV and traditional convection ovens.

Currently, Alliance has two facilities, both in the Toronto area—a 75,000-sq-ft, 160-employee, full-time production facility in Mississauga, Ontario and the aforementioned research and development location in Vaughan. The production facility has a processing capacity in excess of seven million sq ft of parts per month.

When a new part comes in to Alliance, it does not go straight to the production facility. Instead, it is sent to the Vaughan location where it undergoes in-depth analysis in order

ABOUT ALLIANCE SURFACE FINISHING

Based in Vaughan, Ontario, Alliance Surface Finishing applies powder coatings to non-conductive surfaces such as plastics.

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to determine how it can be processed most effectively. “We aren’t fans of the scattershot strategy,” says Langlois. “Our approach is very scientific in nature and it’s how we handle every new customer and every new part.”

Once the part has been thoroughly scrutinized, it is subjected to a number of test runs at the R&D center’s production area, a scaled-down replica of the system found in Mississauga. There, engineers tweak virtually every aspect of the application process in order to generate a recipe for the conditions required to yield the best finish. It is only once the recipe has been perfected—a process that can take anywhere from an hour to five days, according to Langlois—that it is passed on to the computer-driven production facility. There, in a relatively seamless process, the system is automatically configured and production begins.

In the Beginning...

Remember that Tier One automotive supplier who told Langlois that they wanted a cheaper way to paint parts? At the conclusion of that meeting, Langlois asked them for some parts to powder coat. The supplier obliged, and the two parties agreed to meet again in the near future.

Six months later, with his upstart company climbing onto its feet, Langlois returned to the supplier with the powder coated samples in hand. In a blind test, his parts were set

next to unmarked parts that had been liquid coated, and five paint experts (from the supplier company) were asked to select the finish they liked better. When all five chose the same sample, Langlois asked them why they chose it. "They said, 'that one is the best, and we know liquid is the best,'" he says. "I flipped the winning sample over, and it was ours." The supplier wrote him a purchase order on the spot.

"We used automotive as our starting point," says Langlois, referring to the industry's notoriously rigid quality requirements. "Once we tackled automotive, we knew we could do anything."

Anything means anything. Langlois says that, in addition to parts for a number of automotive suppliers, his company is powder coating plastic parts for a variety of industries, including recreational vehicles, appliances, plumbing, electronics, sports equipment and office furniture.

The latter is of particular interest to Langlois, who says that his company is currently dealing—on some level—with every major office furniture manufacturer in North America. One such company is the Global Group, a maker of office chairs, desks, workstations and filing systems. Two of Global's bright yellow and black powder coated office chairs were on display at the recent Powder Coating 2004 show, which had attendees—and more than a few exhibitors—ooh-ing and aah-ing.

Langlois believes now that a major hurdle has been cleared by his company. Manufacturers and consumers of plastic products will begin to better appreciate the attributes of powder coatings, such as the wide variety of colors (Alliance offers more than 4,500) and textures available. "One of the great things about powder is its status as a three-dimensional finish," says Langlois. "With powder, you can make a rough surface smooth or a smooth surface rough."

The successful application of powder coating to plastics may also solve some of the color harmony issues that manufactur-

ers routinely deal with. Companies within the appliance industry, for instance, have traditionally powder coated the bodies of its washers and dryers while relying on liquid paint for plastic door handles and other components. Precise color matching, under those circumstances, can be difficult, if not impossible. "If we can overcome that issue by powder coating everything," says Langlois, "I can see the appliance industry becoming fully committed to powder."

Alliance is currently approaching the mid-point of what Langlois describes as a "very intensive" five-year roll-out program. In addition to its two facilities in the Toronto area, Alliance is working with the State of Michigan to open a 120,000-sq-ft production facility early this year. A third location is scheduled to open in Tennessee by year's end.

"The opportunity is certainly there," says Langlois. "We're going to prove the technology to each and every industry and customer."

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