Powder Coating—Should You Make the Switch?

By Paul D. Lovett

Powder coating is an exciting growth segment of the surface finishing industry. Sales of powder and related equipment in the U.S. are already approaching $1 billion annually, and certainly exceed that amount in other parts of the world, particularly in Europe. A good economy has stimulated conversions to powder coatings in recent years, and growth of this technology will be sustained for a long time, because it is founded on basic restructuring of the coatings market. Although competitive positioning has hurt profits for some, those who sustain and grow their businesses will ultimately be rewarded by a strong market position that will generate cash.

The development of powder technology originally was motivated by the need to meet legislated restrictions on solvent emissions. Because the powder coating process eliminated solvents, manufacturers of metal products and custom coaters began to install powder application systems.

Now, some 30 years after its introduction, powder technology has progressed so that decisions are being made to use it for other reasons—either because the performance of the finished coating is better, or because the applied cost is lower than that for traditional liquid coating systems.

Numerous products are converting to powder coating. Conversions have been made by appliance, metal furniture, and sports and recreational equipment manufacturers. Lawn and garden equipment, farm, construction and industrial equipment builders are using powder, as are architectural metal suppliers. Powder technology has become widespread in the auto industry for functional coatings on underbody parts. Its use on the exterior of motor vehicles is rapidly expanding and has potential for explosive growth.

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Should You Make The Switch to Powder?

To what extent should you, the surface finisher or custom coater, be a participant in the powder coating market? If you already are coating with liquids and your volatile organic compounds (VOCs) are not a problem, you cannot ignore the market being driven to powder by customer specifications. If your customer's competitors switch to powder, your customer is likely to do the same.

What strategies are available to you? If you are a participant already, should you expand? To answer these questions, you need to consider information about the market ... about the competition ... and about yourself.

The fact that it is a fast-growing, billion-dollar market does not necessarily mean that you can make money in the business. Every piece of that market in existence today is already accounted for. You must either take it away from a competitor or look for new business. The trick is to be in position when that business matures—without going bankrupt first!

No company can be all things to all people, and that's good. It gives the little guy an opportunity to focus on a segment of the market that the larger regional or national competitor doesn't have time to consider. Although bigger companies will invariably be able to purchase raw materials cheaper and develop other economies of scale, they may not be able to gain the edge in customer service, delivered cost, delivery time, and marketing intensity that can be offered by a more localized effort.

The Market Situation

Total annual sales of powder coatings in the U.S. are estimated to be $730 million. Sales of powder application services are a considerable multiple of that—well into the billions—while yearly sales of associated equipment is estimated to be nearly $100 million. The overall powder market is estimated to be growing at a rate of 11–18 percent per year, in contrast to an economy that grows at three to four percent annually, and a paint industry that plods along with the economy.

Four key issues contribute to the success of powder coating:

- Environmental pressures
- Demand for improved quality
- Declining costs
- Proven technology

Environmental Pressures

Environmentally driven pressures on manufacturers to reduce solvent emissions continue to expand under both federal and state mandates. Powder coatings are devoid of solvents, and outperform any of the traditional liquid coating alternatives. Not only does powder coating eliminate VOC emissions, it often reduces hazardous waste generation to a fraction of previous levels.

A manufacturer's options for eliminating VOC emissions are to: Invest in a new coatings line, shut down its line and outsource its coatings requirement to a custom coater, or install abatement equipment. Companies are pursuing all three options.

The fact that a company outsources its coatings requirements does not necessarily mean that powder is used. If a company elects to use outside services, it does not always specify that the coating be applied with powder. Often, it will only require that the coating meet the customer's specifications for performance.

The attractiveness of your market as an existing or prospective custom powder coater is partially a function

of the intensity of regulatory control on emissions. The fact that you are not now in an intensely controlled geographic area does not mean that you cannot compete. You need to know what the state of regulatory control is for your region, and also to what extent competitors have already positioned themselves to provide powder coating services in your area.

Demand for Improved Quality

The second "engine" driving the growth of powder coating is the increasing demand for quality. Powder offers a coating with better performance than the system of coating it typically replaces. Companies of every size are demanding standards of quality never before required, making corporations more sympathetic to spending requirements that improve quality. It is a means of gaining strategic advantage.

Can liquid coatings achieve the necessary level of quality? Yes, but the alternatives are at least as expensive as powder and have more environmental concerns.

Declining Costs

Because of the expansion of powder coating processes and higher levels of demand for coatings services, the costs of powder production itself, as well as the cost of conversion from traditional liquid coatings systems, are dropping. In addition, companies are continuing to develop new manufacturing techniques that will reduce equipment installation, application and production costs.

Recycling of overspray product is another cost-saving advantage to powder. Transfer efficiency can increase from 30–90 percent or higher. A secondary benefit to conversion is reduction in hazardous material generation, which results in reduced disposal costs.

Although it is always a hurdle for companies, both large and small, to overcome resistance to conversion expenses, the investment is a worthwhile one.

> "In spite of its shortcomings, powder coating is a star market performer."

Proven Technology

Powder is no longer a novelty. It is a proven technology and, as more companies install powder finishing lines, still more gain confidence by recognizing its benefits and accepting its established position in the industry.

Conversion Constraints

There are, however, limitations to the use of powder. So far, it is typically limited to metal substrates. While there is occasional use on specialized plastics, and research continues on its use on wood, neither of these substrates are currently acceptable for widespread commercial use. Temperatures required for curing the powder exceed those that the substrate can withstand before deteriorating. Although possible, it is difficult to prepare wood or plastic to create the necessary static forces that make the powder adhere prior to heating.

Surface preparation requirements are more stringent for powder than for liquids. This generally limits the use of powder to factory-applied situations. Seven-stage cleaning processes are often used, raising the capital requirements for conversion.

There are exceptions, however. Powder can be flame-applied, allowing application outside the plant environment. Some custom coaters are generating business through this method. In addition, powder is being successfully applied to large, over-water bridges in Spain, Hong Kong, California and other areas.

Even when factory products are made of metal, there are limitations to the use of powder. In some plants, the product being manufactured (such as construction machinery) is to be painted after assembly. If the product includes rubber, plastic or wood components—even small items, such as seals and gaskets—powder cannot be applied because of the required curing temperatures. Conversion to powder would require component pieces to be coated before assembly, which would necessitate a complete reordering of the production sequence or, in some cases, re-engineering of the product. (For the custom coater,

A Look at Potential Powder Markets

The markets that widely use powder coatings include appliances, metal furniture, sports and recreational equipment, automotive exterior and underbody parts, lawn and garden machinery, architectural accessories, and a wide variety of products produced by fabricated metal processors.

Certain types of metal products are more likely than others to use powder coatings and, as a result, some market sectors can be described as already having been largely converted to powder. Products made from square or round metal tubing, for example, are likely to be powder coated, as well as exercise equipment and most tubular outdoor casual furniture.

Lawn and garden equipment is assembled from relatively small, light-gauge sheet metal components that are coated prior to assembly. Consequently, such items as lawn mowers, snow blowers, garden tillers, spreaders and related equipment are almost all powder coated. Automotive parts, including colored and high-gloss parts such as wheels and oil filters, are widely powder coated. Underbody parts are often finished with a functional black powder coating. Commercial applications for powder include metal lamp fixtures and store shelving.

An Evolving Technology

A further consideration is the potential for new markets. The powder industry is working hard on formulation improvements that can compete with liquids. Examples of the evolving powder technology include:

- Architectural quality
- Automotive clearcoat
- Plastic coating
- Low-temperature curing

In Europe, metal architectural building products are often powder coated. This is not the case in the U.S., because of stringent durability standards that powder technology has

this could represent an outsourcing opportunity—manufacturers that cannot convert to powder will need to send those parts out for coating.)

It may also be difficult to achieve the required temperatures if the metal is too large or too thick. Additional heat energy to accomplish this adds to the cost of powder coating. Products with deep recesses may also pose problems for powder coating because of the "Faraday Cage" effect on powder as it is being applied.

The most common constraint to converting to powder is capital cost. In addition to the cost of new application equipment, pre-treatment systems and post-heat ovens add considerably to the investment. Although there are many examples of conversions to powder that achieve a payback period of just a few months, companies may still hesitate to add a powder line.

In spite of its shortcomings, powder coating is a star market performer. Yet many companies report poor profits in powder, lose heart in its potential, and more frequently than one might expect, sell off their powder operations. Unfortunately, few companies recognize the attractiveness of the powder market, so competition becomes a problem.

Is Your Company In a Position to Compete?

As a custom coater, you need to evaluate your potential as a new entrant or an expanding participant in the powder coating industry by analyzing your company's strengths and strategic alternatives.

Study your business in terms of market segments—what portion involves coating metal products that are conducive to powder technology? The companies in your existing customer base are the ones with which you have developed the closest relationship, and are therefore the most likely to use your new powder capabilities.

If you are in a geographic area that includes potential customers, find out to what degree they have converted to powder already, and if they are using outside services. A detailed market study can improve your ability to predict the level of powder coating business you might expect. It is typical for companies to make investments of this sort on "gut feel," rather than on the basis of such an analysis. However, companies can go bankrupt by making investments without first researching the market. Contacts made during the initial research are often the first sales calls for the new business, and may provide the necessary basis for getting the financing to build your new powder line. As emphasized earlier, always consider the competition—is there room in your area for another supplier of powder coating services?

A Challenging Decision

As a custom coater in business today, even one limited to application of liquid, you have advantages over start-up powder coaters. A reputation for quality and a strong customer base, combined with experience in coatings practices, can position you as a viable competitor. If you limit yourself to liquid-based finishing, however, you face a future loss of business from customers moving to powder.

The powder market is an attractive one, and is the fastest-growing segment of the finishing industry. But success is not automatic. It comes from a determined strategy that ultimately leaves you with a competitive advantage. Are you up to the challenge? ***P&SF***

About the Author

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not yet demonstrated. High-performance liquid coatings, which are laden with VOCs, are most commonly used in the U.S. Researchers in powder technology are working hard to find a substitute for these liquids.

Millions of dollars are now being spent by the automotive industry to find a powder clearcoat for car bodies that can replace the currently used high-VOC coating. It is already common practice to apply a powder clearcoat on accessory products, such as wheels and other components, and the use of powder primer for utility vehicles is becoming standard. Companies that are in a position to supply coatings to the automakers are few, but as advances in technology continue, the benefits will spread to custom coaters and metal product manufacturers.

Low-temperature-cure powder formulations are being researched that would reduce energy requirements and expand the market to manufacturers of larger and bulkier metal fabrications, as well as to plastics. Reinforced plastics are currently being powder coated for use as body panels on some automobiles.

Changing Competitive Structure

The powder industry is in a state of constant change. Every time a custom coater adds a powder line, the competitive structure of the market in the area surrounding that plant is affected. Many smaller companies that have been focused on liquid for the industrial or OEM sector are now installing equipment to manufacture powder, and others are making significant capacity additions to their existing powder lines.

Is there room left in your area for another supplier of powder coatings services? If you act now, you could give yourself a competitive advantage in a market that is growing fast. ❑