

Fabricator leaves Independence and enlists powder to regain its self-determination

After outgrowing its plant, a metal fabricator moves to a new site that enables growth and the capability to address customer demands by installing a powder coating line.

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Independence Custom Fabricators Industries (ICF) left the town of its namesake, Independence, Mo., last year. The manufacturer, who serves a variety of industries such as heavy trucking and lawn care, had outgrown its 48,000-square-foot plant. To unfetter itself and address its customers' demands, the company had to leave Independence to find greater freedom. The promised land lay approximately 25 miles southeast in Pleasant Hills, Mo. Despite the short distance, the move proved challenging. Ice rained from the skies over the course of the 3-day move in December 2007. "I remember those days very well," said Bob Krug, company president.

However arduous the move proved to be, it bore the fruits ICF sought. The new location lies on 17 acres and has a plant with 89,000 square feet. In addition, the new location allowed the manufacturer to offer more capabilities to its customers, including powder coating in house. "We had been stagnant for 3 or 4 years," Krug said. "We couldn't grow anymore where we were. We had several customers urging us to have painting capabilities in house. So, I saw this building and we renovated it."

Previously, ICF had outsourced its powder coating. This proved problematic. Varying lead times with its

coaters made production scheduling a daunting task. The coater's lead times varied from 1 day to 2 weeks. Outsourcing posed a host of hidden costs that eventually became painfully apparent on the bottom

line. Personnel had to prep the parts to be shipped to the coater by packaging, loading onto a truck, and then sending the parts out. After coating, the parts had to be received and inspected before ICF



ICF installed a powder coating line that included a polypropylene washer. The construction allows workers to observe parts in process and facilitates maintenance.

ultimately shipped the product to its customers. These processes demanded more personnel and more shipping. Freight was and continues to be a concern. With the national average for a gallon of gasoline quickly approaching \$4, it becomes important to reduce parts-in-transit.

Looking for the right line

To address these concerns and improve the services to its customers, ICF chose to install a powder coating line in its plant. But this company had no coating experience. To educate itself, ICF personnel began researching powder coating systems. First, workers gathered information available on the Internet. Krug appointed Isaac Gipson, senior manufacturing engineer, to assist in the research and become familiar with the process. Next, Krug and Gipson contacted powder coatings manufacturers and asked a lot of questions. After getting some answers, the team went to other manufacturers who were installing or had installed a powder coating line

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and toured their facilities. After calculating installation costs, Krug visited another coater that significantly impacted ICF’s search. “I met with a gentleman [who] had installed a line near here,” Krug said. “He told me that in 10 years his paint line had not been down. That opened my eyes a little bit.”

This particular line was installed by General Automatic Transfer (GAT), Fenton, Mo. Afterward, ICF visited other coaters and manufacturers who had installed GAT lines. In addition, Krug and Gipson toured GAT’s factory. The washer stood out for Krug: “I was intrigued with the poly-

propylene sides. Every paint line that I have seen, if you look into the washer, it’s dark and you can’t see the parts at all. With the [polypropylene washer] it’s bright. You can see every nozzle and what’s going on with spray patterns.”

After deciding on its systems supplier, ICF told the supplier what it expected from its powder coating line, including the part-size window. To combat humid summers, the line needed to include a climate-controlled environment for the application area. Said Krug: “Our [custom coaters] would come in at 2 or 3 am and go home at noon because of the heat inside the building.” In addition, Krug said he wanted to alleviate heat buildup by placing the ovens outside the plant building, but not on the roof because of costs. In addition, Krug hired Charles Sipes, powder coating foreman. Sipes had had 24 years of coating experience and facilitated the line installation and startup.

Navigating the new system

After weathering its arduous relocation during an ice storm, the powder line installation and startup went seamlessly and quickly became a natural service ICF offers to its customers. Line speed ranges from 3 to 9 feet per minute. The line can process parts 2 feet wide by 4 feet tall by 8 feet long. Parts traverse the line along a 570-foot-long Rapid Flex enclosed-track conveyor supplied by Rapid Industries, Louisville, Ky. The hooks are on 8-inch centers.

Workers first load parts onto the line at the load-unload area. Next, parts pass through a five-stage polypropylene washer. The polypropylene construction allows workers to see parts in process and reduces maintenance demands. Chemetall Oakite, New



Two spray operators manually apply powder inside the system’s environmental room.



An external structure houses the line's combination dry-off and cure oven.

Providence, N.J., supplies the chemicals. Stage one imparts a low-temperature soap followed by a freshwater rinse. Stage three applies an iron phosphate followed by another freshwater rinse and culminating with a seal-rinse. Krug demanded a five-stage pretreatment system. "Some people mentioned putting in a three-stage washer," he said. "I said 'we are going to do this line once, so I want to do it right.' Five stages give us another 250 hours salt spray. I wanted to make sure our parts were clean, and the five-stage was the best to have a high-quality, high-end finish."

After exiting the washer, cleaned parts leave the building and enter the oven on the building's exterior. A structure encloses the combination dry-off and cure oven. Parts pass through the dry-off section. Next, the dried parts re-enter the plant and cross into the climate controlled environmental room. Two spray operators manually apply powder with manual guns and hopper systems from Nordson, Amherst, Ohio. Because of constant color changes—as many as seven daily—the operators spray to waste. This constant color change results from customers who are using lean manufacturing practices and as a result are running smaller volumes. ICF spray operators can do 10-minute color changes. Before the system was installed, the operators had no powder coating application experience. Sipes wanted it this way so that they could be trained properly. "Within a couple of days, they were and are doing an outstanding job," Krug said. "You couldn't ask for a better start-up, and there was a very little learning curve."

After being powder-coated, the parts go into the cure oven via the oven entrance, which is inside the environmental room. Depending on line speed, oven dwell time ranges from 20 to 29 minutes. Oven temperature ranges from 325°F for low-temperature-cure powders to 400°F for standard powders. Parts then exit to a cooling-off area and arrive at the load-unload area.

Taking a new path and regaining something that was lost

As a result of installing its own powder line, ICF has improved its product quality, regained control over its production scheduling, and reduced its lead times to its customers. Furthermore, powder capabilities have enhanced the company's ability to retain and gain customers. "Especially now with freight costs going up, customers want to place one order with one person and they want it done," Krug said. "They don't want to place two orders—one to the painter and one to the fabricator. It's been a great marketing tool to have. Not every shop has its own paint line. We moved out here to Pleasant Hill, which is 25 miles away from the city. If we didn't have this paint line, we'd be dying on the vine—without powder we would be running trucks every day."

As a result of no longer outsourcing coating, ICF had reduced the potential for damages and defects incurred through shipping back and forth. This improved process control bolsters quality and customer service. When ICF outsourced, discrepancies between the number of parts shipped out and those received back abounded. This is no longer an issue. "We took on this responsibility," Krug said. "I told the guys 'We can't use the excuse that it's at the painter.' We are the painter. And that's what our customers wanted to hear."

Moreover, powder capabilities have allowed ICF to regain business that it had lost. Years ago, one of the manufacturer's signature products was custom cabinetry. However, the company lost this business to a competitor who had a paint line. "When we were talking to the customer several years ago, he said 'Bob, your raw material costs are fine but you lose out in the painting,'" Krug said. "I stuck this in the back of my mind, and now we're back quoting those cabinets again."

In addition to regaining lost business, ICF has used powder coating to attract more business than originally anticipated. Krug forecasted that the line would be run 4 days a week with one shift. Today, the line runs two shifts daily, operating 10 to 18 hours a day. Customers are placing more orders and more of those orders include powder coating quotes. ICF also serves as a custom coater for manufacturers without coating capabilities. "Looking out there today, I wonder how did we operate so long without this line?" Krug said. "It's just like when we started using lasers here. For years, we had been using turret punch presses, but when we got our first laser, we wondered how we ever ran without it. It's really something."

Systems supplier: **General Automatic Transfer, Fenton, Mo. 636/343-6370. www.gat-systems.com**

Powder coatings: **DuPont Powder Coatings, Houston. 713/939-4000. www.dupontpowder.com**

Powder coatings: **TIGER Drylac USA, Ontario, Calif. 909/930-9100. www.tiger-coatings.com**

Powder coatings: **Diamond Vogel, Orange City, Iowa. 712/737-4993. www.peridiumpowder.com**

Conveyor: **Rapid Industries, Louisville, Ky. 502/968-3645. www.rapidindustries.com**